

ART. IX.—*A Locality List of all the Minerals hitherto recorded from Victoria.*

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[Read 13th August, 1896.]

INTRODUCTION.

In offering this list of minerals found in Victoria, I do not claim to have made any fresh records; but rather to have collected into one paper the records that are spread over a great many different publications. New South Wales has its list in Professor Liversidge's "Minerals of New South Wales," and a supplementary list in the "Report of the Second Meeting of the Australasian Association for the Advancement of Science, 1890." Queensland, South Australia, and New Zealand, have their lists also in the last-named work, and Tasmania has a list published by Mr. W. F. Petterd in 1893, while the most recent list of Victorian minerals was many years old, and, in consequence, incomplete, inasmuch as it did not contain the records of the last twenty years or more.

Having felt the want of such a list, and having time to spare, I acted on the advice of gentlemen interested in mineralogy, and undertook to search for all the published records and include them in one catalogue. The object was not only to enumerate all the minerals, but, as far as possible, also all the localities where they were found, either in large or small quantities, and to give the reference to the original record. The work demanded much more time and labour than I anticipated, but I have derived much pleasure and not a little profit from it, and the number of books and papers I had to go through to find the records shows how badly the work needed doing. It is a pity that some professional mineralogist had not taken the work up, or, being left to an amateur, that a more able man had not undertaken it. I feel this the more when I contrast it with the list published in 1866 by Professor Ulrich, who seems to have done most of the work of this kind in Victoria.

Very many interesting particulars were given in connection with some of the records, and I should have liked much to include them in this paper, but space would not admit of it, and thus, in some respects, it may be looked upon as but an index to the mineral records.

I have had a difficulty in fixing the mineralogical names for some of the records, and in some cases I have not been able to decide the correct species at all, as the composition alone was given, *e.g.*, "carbonate of copper," "oxide of iron," "lead ore," etc. This prevents me from being able to state accurately the number of distinct mineral species recorded from Victoria, but I calculate it to be somewhat over 200. Mr. W. F. Petterd in the introduction to his "Catalogue of the Minerals of Tasmania, 1893," calculates that New South Wales has about 185 species, New Zealand about 172, Queensland about 101, and South Australia about 100; so that Victoria seems to rank highest of the colonies in the number of its mineral species.

I have to thank Mr. G. B. Pritchard, and Mr. T. S. Hall, M.A., for much valuable assistance in connection with this paper; also Messrs. A. W. Howitt, F.G.S., O. R. Rule, late of the Technological Museum, A. Purdie, of Ballarat School of Mines, and D. Clark, of Bairnsdale School of Mines, for advice, suggestions, records, etc., which they kindly gave me.

LIST OF ABBREVIATIONS.

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| Bl. 1866  | - - | Rev. Dr. Bleasdale, in Official Record of Melbourne Intercolonial Exhibition, 1866.   |
| B.S. 1866 | - - | R. Brough Smyth, in Official Record of Melbourne Intercolonial Exhibition, 1866.  |
| B.S. 1872 | - - | R. Brough Smyth, in Official Record of London International Exhibition, 1873, Melbourne, 1872-3.                                      |
| B.S. 1861 | - - | R. Brough Smyth, in Catalogue of Victorian Exhibition, 1861, with prefatory essays.   |
| Cl. - - - | - - | Donald Clark, B.C.E., of North Gippsland School of Mines, in Report of Australasian Association for the Advancement of Science, 1892. |

- Chem. News - Chemical News.
- Geo. Sur.  $\frac{1}{4}$  sheet. Geological Survey of Victoria, quarter sheet.
- G.S.N.S.W. - Records of the Geological Survey of New South Wales.
- H. - - - - A. W. Howitt, F.G.S.
- H. 1896. - - Notes on Diabase and Adjacent Formations of the Heathcote District, by A. W. Howitt, published as a Special Report by the Department of Mines, Victoria, 1896.
- L. 1873. - - Official Record of the Victorian Court of the London International Exhibition, 1873.
- M. 1866. - - G. H. F. Ulrich, in Official Catalogue of the Melbourne Intercolonial Exhibition, 1866.
- M. 1870. - - G. H. F. Ulrich's "Contributions to the Mineralogy of Victoria," in Papers presented to Parliament, 1870, Second Session, Vol. 2; also published separately.
- M.R. - - - Reports of the Department of Mines, Victoria.
- M.H. - - - Miners' Handbook, issued by the Department of Mines, Victoria, 1894.
- M.S. - - - Mineral Statistics published by the Department of Mines, Victoria.
- M.R.F. - - - Catalogue of Minerals, Rocks and Fossils, collected in the Colony by the Mining Department, 1866.
- N.M. - - - Catalogue of the National Museum, Melbourne, 1868.
- P. - - - - Papers presented to Parliament, Victoria.
- P.R. - - - Progress Reports of the Geological Survey of Victoria.
- Pr. R.S. Vic. - Proceedings of the Royal Society of Victoria.
- Pd. - - - Mr. A. Purdie, M.A., of Ballarat School of Mines, in private correspondence.
- R.A.M.S. - - Records of Australian Museum, Sydney.
- Sel. 1861. - - Dr. A. R. Selwyn, in Catalogue of Victorian Exhibition, 1861, with prefatory essays.
- T.M. - - - The cases in the Technological Museum Melbourne, or in the Catalogue of the same, 1894.

- T.S.H. - - - T. S. Hall, M.A., in Proceedings of the Royal Society, Victoria, 1895.
- Trs. R.S. Vic. - Transactions of the Royal Society of Victoria.
- Trs. R.S.S.A. - Transactions of the Royal Society of South Australia.
- V. 1873. - - Official Catalogue of the Victorian Exhibits at the Vienna Exhibition, 1873, bound with Official Record of the London International Exhibition, 1873, Melbourne, 1872-3.
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- ACTINOLITE.—Near Heathcote, in diabase rocks (H. 1896).
- ADAMANTINE SPAR (Hair-brown Sapphire).—Blue Mountain and Beechworth districts, washed grains in the gold-drifts. (M. 1866). Mornington (T. M.).
- ADULARIA.—Reid's Creek, Beechworth, small pieces in druses (M. 1866).
- AGALMATOLITE.—Keilor Plains, nodules in basalt. (Sel. 1861). Keilor and Gisborne, in basalt (M. 1866).
- AGATE.—Beechworth creeks; Yarra basin; several parts of Gippsland; Murray River near Wodonga, very frequent. Banded varieties, "*Fortification Agate*," "*Landscape*," and "*Moss Agate*," are not rare. Cape Otway Coast (M. 1866). Near Berwick; near Dandenong (M. 1870). Yarra Ranges (B.S. 1866). Beenak (P. 1883). Warburton (P. 1891). Boggy Creek; Baldhill, with crystals of quartz interlaced (Cl.). Koroit Creek (T.M.). Avoca; Chiltern; Mouth of Gellibrand River; Lake Cooper; Sassafras Creek (P.R. Vol. 3). Woori Yaloak Creek (V. 1873). Near Kilmore (Geo. Sur.  $\frac{1}{4}$ -sheet 4 N.W.).
- ALBIN (variety of apophyllite).—Harcourt granite quarries, in druses (T.S.H.).
- ALBITE.—Blacksmith's Gully Reef, Fryerstown, in veins and druses of fine crystals (analysis of this felspar by C. S. Wood in National Museum Catalogue, 1868); Eaglehawk Reef, Maldon; Tarilta, in a syenitic rock (M. 1866). Kyneton (Sel. 1861). Cape Woolomai (P. 1878). Francis Ormond; Garfield; Crown Nimrod; Coomb's

Gully; and other mines in the Castlemaine District (T.S.H). "The felspar of a very silicious granite, with a vein of cassiterite, near Beechworth, appears to be albite" (P. 1870). Bendigo (P.R. Vol. 3). Near Heathcote, in diabase rocks (H. 1896).

ALMANDITE.—Ovens; Ballarat (Bl. Trs. R.S. Vic., 1865-6).

ALLOPHANE.—"The partly decomposed basalts and the clays of the gold-drifts, and the fossiliferous tertiaries around the coast, are generally very rich in nodules and veins of amorphous silicates of alumina and magnesia, of uncertain, *i.e.*, variable, composition; specimens resembling allophane, halloysite, meerschaum, &c., have been found at many places (M. 1866). Hampshire Reef, Golden Point, forms kernels in a loose sugary mineral in the caps of the reef. The loose sugary mineral is probably a variety of allophane (M. 1870). Pleasant Creek; Strathloddon (P.R. Vol. 3).

ALUNITE.—Near Magnet Hill, Gisborne, nodules and crusts in a basalt quarry (M. 1866). Sunbury in black pyritous shales (N.M.). Gisborne and elsewhere on the goldfields (B.S. 1872).

ALUNOGEN.—Barker's Creek slate quarries near Castlemaine, as a thick efflorescence (T.S.H.).

AMETHYST, OR AMETHYSTINE QUARTZ.—Beechworth district, in the drifts, or in the veins traversing granite; Bradford Lead, Maldon, in the drifts. "The light colour of the Maldon specimens makes the designation 'Rose Quartz' more applicable" (M. 1866). Chiltern, druse cavities in granite (T.M.). Bendigo; Linton; Upper Yarra; Yackandandah (P.R. Vol. 3).

AMETHYST, OR ORIENTAL AMETHYST (Corundum).—Pakenham (M. 1870). This specimen was a hexagonal prism with rhombohedral planes (N.M.). Beechworth; Dandenong; Stockyard Creek (P.R. Vol. 3). White amethyst at Beechworth (Bl. Trs. R.S. Vict. 1865-6).

AMPHIBOLE.—See *hornblende*.

ANALCITE.—Phillip Island, in amygdaloidal basalt (M. 1866). Phillip Island, in regular trapezohedrons in older basalt (N.M.). Chambers' quarry, Richmond, as trapezohedrons (M. 1870). Flinders (T.M.).

- ANATASE.—Latrobe River, Gippsland, in the tin sand (P. 1874). Beechworth (L. 1873, p. 199).
- ANDALUSITE.—Tongio West, Swift's Creek, Gippsland, the first discovered in Victoria (P. 1878). Upper Murray; Maldon, crystals in granite (T.M.) Ararat; Inglewood; Pyrenees (P.R. Vol. 3). *Chiastolite* is recorded from near Geelong (T.M.) *Silicate of alumina*, Amherst (V. 1873).
- ANDESINE.—Near Heathcote, in diabase rocks (H. 1896).
- ANGLESITE.—Wilson's Reef, St. Arnaud; Glen Dhu Reef, Landsborough, sparingly in small, rather imperfect crystals in cavities (M. 1866). In the mineral veins throughout the colony (B.S. 1866). Buchan, from oxidised galena (Cl.). Dargo High Plains (P. 1872).
- ANKERITE.—Phillip Island, in older basalt. In this rock there occur narrow veins and irregular patches of a dense, light, greenish-yellow mineral, which proved on analysis closely related to "*ankerite*" (M. 1866).
- ANTIMONY (NATIVE).—Maldon, in a metamorphosed vein in Silurian sandstone (P. 1873). Dunolly (M.R. 1889). Near Mansfield (P.R. Vol. 7). Cashel, near Shepparton (T.M.).
- APATITE.—Dunolly, light greenish grains in quartz; Bass Strait, an impure variety in nodular concretions is sometimes found in the guano deposits of several small islands (M. 1866). Phillip Island, crystals in older basalt (T.M.). Bruthen Creek; Dargo basalts; Taberraberra (Cl.). Eaglehawk Reef, Maldon (P. 1875-6). Maldon, with calcite, dolomite, etc. (P. 1875-6). Near Heathcote, in diorite and diabase rocks (H. 1896). *Phosphate of lime* occurs at Beechworth and Dunolly (P.R. Vol. 3). *Phosphate of lime with silica and alumina* occurs coating cavities in decomposed basalt at Bruthen Creek, Gippsland (N.M.).
- ARAGONITE.—In druses of radiating acicular crystals in the newer pliocene basalts; near Talbot; Taradale; Daylesford, &c.; in hollows of the older pliocene gold-drifts; well developed crystals in hollows of the freshwater limestone, at Muckleford Creek, near its junction with the Loddon

River; nodules in the basalt of Kyneton, Malmsbury, and Taradale, often with a thin glassy coating of hyalite (M. 1866). Sunbury, in basalt; Kilmore, in basalt; Richmond, in basalt; Ballan; Lisle's Reef, Maldon, on metamorphic sandstone (N.M.). Collingwood, basalt quarries (P. 1880). Flinders (T.M.). Riddell's Creek (P. 1883). Hustler's Reef, Bendigo (P. 1878). Phillip Island, in older basalts (P. 1877-8). Ballarat, in basalt; Bendigo; near Newstead; Smythesdale (T.M.). Ararat; Dunolly; Guildford; Keilor; Majorca (P.R. Vol. 3). Maude, Moorabool Valley (Pr. R.S. Vic., 1895, p. 187. See also  $\frac{1}{4}$ -sheet 19 S.W.).

ARGENTINE (lamellar calcite).—German Reef, Maldon (T.M.).

ARGENTITE.—Ebenezer Reef, Morse's Creek, with galena, blende, arsenical pyrites, and gold (M. 1866). St. Arnaud, with galena, blende, native silver, copper, anglesite, mimetite, sulphur, ores of iron and of manganese (B.S. 1866). In P. 1870, Mr. Newbery reported, "No pure sulphide of silver, as a distinct mineral, has yet been found in Victoria."

ARSENIATE OF IRON.—See *Pharmacosiderite*.

ARSENOLITE.—Bethanga (P. 1880).

ASBOLITE (earthy cobalt).—Cape Patterson, in shrinkage cracks of older volcanic rocks; Thomson River Copper Mine; Yea (B.S. 1872). McKenzie's diggings; Goulburn River (T.M.). Alexandra; Glen Dhu; Merton; Strathloddon; Tarrengower; Gippsland (P. 1868). Little Dorrit Reef, Grant (P. 1871). Upper Yarra (P. 1876). Boggy Creek; Mount Taylor; Dargo (Cl.). Costerfield; Crooked River; Dunolly; Griffith's Point; Maldon; Snowy River (P.R. Vol. 3). A report on this mineral by Mr. J. C. Newbery is in the Catalogue of the National Museum, Melbourne, 1868. See also *Wad*.

ASPHALT.—See *Bitumen*.

ASTERIA.—Beechworth, grey or bluish-grey, with six-rayed stars well developed (M. 1866). Eldorado; Ovens (Trs. R.S. Vic., 1865-6, pp. 80 and 81). A green star sapphire from Ovens (Trs. R.S. Vic., 1865-6, p. 79).

**AUGITE.**—One of the principal constituents of our basalts; Malmsbury, small, black, acicular crystals in dolerite; near Black Hill, Kyneton, imperfect crystals in scoriaeous lava. “From its appearance, cleavage, &c., and the result of a quantitative analysis by Mr. J. C. Newbery, there is good reason to suppose that the dark green component of the greenstone (diabase) of the Barrabool Hills, near Geelong, is augite” (M. 1866). Foot of Mount Wallan; near Steglitz, crystals; Mount Hepburn, in basaltic ash; west side of Mount Moorakyle (M. 1870). Magnet Hill; Mount William; Dargo High Plain; Turton’s Creek (P.R. Vol. 3). Dargo, in dyke rock (H. in Trs. R.S. Vic., 1887). Near Heathcote, in diabase (H. 1896).

**AUTOMOLITE** (Variety of Spinel).—Ballarat; Ovens (Trs. R.S. Vic., 1865–6).

**AXINITE.**—Dookie (T.M.).

**AZURITE.**—Thompson River Copper Mine, Walhalla; Steiglitz; Pyreeth Creek; St. Arnaud; Glen Dhu Reef, Landsborough; Nicholson’s Reef, Castlemaine (M. 1866). Blue Mountain; Bendigo; Inglewood; Dunolly (B S, 1866). Dedduck, in quartz vein (P. 1873). Between Koetong and Bright (P. 1875–6). Bethanga (P. 1886). Buchan; Wombat Creek (Cl.). Mount Korong; Lerderderg River, in slate (T.M.). Crooked River (P.R. Vol. 3). Carbonate of copper, without stating which kind, has been recorded from the following places:—Bruthen Creek; Maldon; Broken River; North Gippsland (P. 1868). Buchan; Livingstone Creek; Snowy River; Snowy Creek, near Omeo; Nicholson River; Murindal River (B.S. 1872). Rodney’s mine, near Ballarat (P. 1873). Beaufort; Blackwood; Grampians; Kingower; Upper Murray; Smythesdale; Taradale; Wongungarra River (P.R. Vol. 3).

**BALAS RUBY.**—See *Spinel Ruby*.

**BARITE.**—Swiper’s Reef, Maldon, very rare, in cracks and crevices of the quartz, partly in crystals, and partly in drusy coatings (M. 1866). Devonshire Mine, Castlemaine, rare, platy crystals in quartz (T.S.H.). Maldon, with



heulandite. A spectrum analysis by Mr. Ellery showed a faint trace of strontia (M. 1870). Dedduck, vein in granite (P. 1873). Richmond, in basalt (P. 1877-8). Woods Point (P. 1881). Gibbo River, containing galena and silver; Mitta Mitta (M.R. 1884). Omeo (M.R. 1887). Boggy Creek, Gippsland, in vesicular ferro-manganese ore; Buchan (Cl.). Back Creek; Ringwood; Dookie; Upper Murray; Phillip Island, in older basalt (T.M.). Alexandra; Beechworth; Fitzroy Range; Murindal River; Snowy River; Tubbut (P.R. Vol 3). Geelong (L. 1873). St. Arnaud? (M.R.F.).

BARKLYITE.—Beechworth district (M. 1866).

BARYTA CARBONATE.—See *witherite*.

BASANITE.—Beechworth Creeks, in drifts; Cape Otway coast, near Gellibrand River, a pebble deposit; Joyce's Creek, near Newstead; near Wickliffe, veins in Silurian rocks (M. 1866). Mansfield (P. 1887). Heathcote; Mount Stavely; Ararat; Loddon River, near Maldon (T.M.). Turton's Creek (P.R. Vol. 3). Walhalla (P.R. Vol. 4).

BASTITE.—Near Heathcote, in diabase rocks (H. 1896).

BERYL.—Pilot Creek (P. 1878). Dargo River; Dry Creek; Mansfield (P.R. Vol. 3).

BEUDANTITE.—Port Phillip Company's Mine, Clunes (P. R. Vol. 3):

BINDHEIMITE.—Murindal, Gippsland (Pr. R.S. Vic., Vol. 16, 1880, p. 145).

BINNITE.—Wombat Creek (Cl.).

BIOTITE.—Eureka Reef, Castlemaine, large hexagonal plates in a basaltic dyke; Castle Reef, silvery white in diorite porphyry; the mica at Raspberry Creek, Woods Point, may also belong to this species (M. 1866). Harcourt, in a dyke; Burn's Reef, near Castlemaine, in a dyke; Mount Alexander, in granite (T.S.H.). Mount Taylor, in quartz porphyries; Marengo Creek (Cl.) Fiddler's Reef, Forest Creek, in a decomposed basalt dyke (N.M.). Phillip Island, in older basalt (T.M.). Sultan Mine, Blackwood (P.R. Vol. 3). Near Heathcote, in granite (H. 1896).

**BISMITE.**—Maldon ; Wombat Creek (P. 1868). Omeo district, rolled fragments (P. 1874). A mixture of the oxide and carbonate of bismuth is found in the Beechworth creeks, associated with tin sand (P. 1872). Snowy Creek P. R. Vol. 3).

**BISMUTH.**—Wombat Creek, Omeo ; Upper Yarra ; Ramshorn Gully, in irregularly-shaped pieces of a few dwts. to 1 lb. in weight ; Kingower (M. 1866). Linton's, quite pure, from quartz reef (B.S. 1872). Crossover, Gippsland (T.M.). Beds of streams in Omeo district (P. 1874). Beechworth (M. 1870). Snowy Creek, a specimen coated with oxide and carbonate of bismuth, and ferruginous clay (P. 1875-6). Wilson's Reef, St. Arnaud (P. 1884). Maldon (P. 1877-8). Dandenong ; Costerfield (P.R. Vol. 3).

**BISMUTHINITE** (Bismuth glance).—Linton's, with native bismuth, etc., in scaly, slender, prismatic crystals of fibrous or foliated structure (M. 1870). Wombat Creek ; Baldhill Creek, Gippsland (Cl.). Beechworth (T.M.). Maldon, in quartz, with gold and maldonite (P. 1875-6). Near Linton's, in a quartz reef (P. 1870).

**BISMUTHITE** (carbonate of bismuth).—Tin-Kettle Lead, Ramshorn Gully ; Sandy Creek, Maldon ; also reported from Kingower (M. 1866). Linton's ; Beechworth (M. 1870). Clunes ; Maldon (N.M.). Wombat Creek (P. 1868). Bem River (Combying Creek), Gippsland (P. 1874). Bismuth carbonate also recorded from Omeo district (P. 1874). Snowy Creek (M.H.). An analysis by Mr. J. C. Newbery is in the Catalogue of the National Museum, 1868.

**BITTER SPAR.**—See *dolomite*.

**BITUMEN.**—Specimens found in Western Port and Portland districts ; Grampians, and Pyrenees, a peculiar kind in small caverns and on ledges of rock (M. 1866). See note on this in Catalogue National Museum, 1868, p. 90. Cowwarr (M.R. 1890). Near Bridgewater (M.R. 1889). Traralgon (P.R. Vol. 7). Coal Creek (N.M.).

**BLEISCHWEIF** (See galena). Buchan (P.R., Vol. 3).

**BOG IRON ORE.**—See *limonite*.

- BORNITE.**—Thompson River Copper Mine, distributed through the copper pyrites (M. 1866). Buchan, with chalcopyrite (Cl.). Ballarat gold-drifts; McIvor gold-drifts; Steiglitz; Bethanga; Costerfield (M. H.).
- BOULANGERITE.**—Ballarat, in quartz reef, with chalcopyrite and gold (M. 1866). Blackwood, with pyrite, galena, and antimony (P. 1870). Swift's Creek, with pyrites (P. 1879–80). Snowy Creek; Steiglitz (P. R., Vol. 3).
- BOURNONITE.**—Ballarat; St. Arnaud; Steiglitz, etc., finely impregnated in some of the quartz reefs; Costerfield antimony reef, in crystalline grains, apparently very rare (M. 1866). Walhalla (P. 1873). Heathcote, at the head of Golden Gully (T.M.). North Gippsland, with gold (P. 1873). Wallan (P.R. Vol 3).
- BROOKITE.**—Baw Baw diggings, in quartz (M. 1866). Steiglitz; Mount Greenock lead (M. 1870). Latrobe River, in tin sand (P. 1874). Yarra Flats (T.M.). Broadford (M.R. 1889). Beechworth (P.R. Vol. 3).
- BROWN HEMATITE, BROWN IRON ORE, OR BROWN OCHRE.**—In tertiary rocks around the coast, and occasionally in hollows of quartz reefs (M. 1866). See *limonite*.
- BROWN SPAR** (ferruginous dolomite).—Bendigo and Walhalla, in quartz (B.S. 1872). Woods Point (M. 1870). Beechworth; Clunes; Mount Timbertop (P.R. Vol. 3). Gaffney's Creek; Jameson (L. 1873). See *dolomite*.
- BRUSHITE.**—Skipton Caves, near Ballarat, in guano deposits (P. 1878).
- BUCHOLZITE.**—Moroka Valley, Gippsland, in granite (M. 1866). Swift's Creek (P. 1878). See *fibrolite*.
- CACHOLONG.**—Stawell (P.R. Vol. 3).
- CADMIUM.**—St. Arnaud, with silver and sphalerite (P. 1873). Bruthen Creek; Costerfield (P.R. Vol. 3).
- CAIRNGORM.**—Beechworth; Tarrengower; Upper Yarra; in quartz veins traversing granite, and in the drifts (M. 1866). Ovens (Sel. 1861). Maldon (M. 1870). County Evelyn (P. 1877–8). Gibraltar diggings, near Berlin (P. 1878). Castlemaine (T.M.). Gippsland (P.R. Vol. 3). Smoky quartz is also recorded from Harcourt granite quarries (T.S.H.).

**CALCITE.**—On the goldfields of Victoria; Maldon, crystals in druses in quartz; Malmsbury, in basalt with chabazite; Phillip Island, in basalt; Muckleford Creek, in fresh-water limestone; Barrabool Hills; Cape Otway; Western Port; Traralgon; Geelong, in drift beds (M. 1866). Ararat; Richmond; and Clunes, in basalt; Moe's Swamp (M. 1870). Buchan, in limestone; Wombat Creek with galena; Bindi, in limestone, and as marble; Tambo; Nicholson River; Bairnsdale (Cl.). Ajax Mine, Castlemaine, rhombohedral and massive; Wattle Gully, crystals (T.S.H.). Geelong, in limestone; Guildford and Keilor, in basalt; Preston Vale, in granite; Kyneton (N.M.). Walhalla (B.S. 1872). Maldon (P. 1875-6). Collingwood, in basalt; Riddell's Creek (*ferro-calcite*); Pentridge (T.M.). Jan Juc; Curdie's River (P. 1884). Bendigo (P.R. Vol. 7). Ballarat (M.R. 1889). Near Lorne (M.R. 1890). Warrnambool (Pr. R.S. 1891, p. 95). Charlotte Plains (P. 1891). Chetwynd, in older basalt; Collingwood, as *rock milk*; Maldon, as *Argentine*; Western Port; Flinders, in basalt; Mornington; Campaspe River; Gippsland Lakes; Dookie; Heywood; Lilydale (T.M.). Generally distributed (Sel. 1861). Running Creek (P.R. Vol. 5). Brunswick quarries (P.R. Vol. 6). Clunes; Moyston; Bendigo; Woods Point; Tyers River; Waratah Bay (P.R. Vol. 3). Near Heathcote, in diabase rocks (H. 1896). *Calc-sinter* is recorded from Gippsland (P. 1887), and Collingwood, in basalt (T.M.).

**CARBONATE OF SODA** (anhydrous).—Lal Lal (P. 1885).

**CARNELIAN.**—Sparingly as small pebbles in drifts of the Beechworth creeks; Yarra Basin; several parts of Gippsland; Murray River, near Wodonga (M. 1866). Woori Yaloak Creek (V. 1873).

**CASSITERITE.**—Omeo district, in the creeks; tributaries of the Yarra River; Iatrobe River; Thompson River; Gullies in the Strathbogie Ranges; Taradale; many places in Gippsland (M. 1866). Eldorado; Woolshed; Sebastopol; and other places in the Beechworth district;

Ovens ; Little Yarra basin, with titaniferous iron sand ; Cape Otway district ; Tarwin River ; Crossover Creek, Gippsland ; near Daylesford ; near Colac ; Chiltern ; Cudgewa Creek ; other creeks running into the Murray River (B.S. 1872). Indigo Creek, as black sand (P. 1869). Koetong Creek ; other creeks rising in the same ranges ; Tarwin Creek ; Upper Murray ; many districts in North-Eastern Victoria and Gippsland (P. 1873). Mount Fatigue ; Mansfield ; Burrawa Creek ; Muddy Creek, South Gippsland ; Bright (P. 1874). Franklin River ; Stockyard Creek (P. 1875-6). Traralgon Creek (P. 1876). McCrae's Creek ; Slaty Creek, Gippsland (P. 1877-8). Morwell River (P. 1878). Bass River district (P. 1881). Benambra (T.M.). Talangatta Creek ; Pioneer Creek ; Acheron River ; Malmsbury, with metallic tin ; Bunyip Creek (P. 1882-3). Between Bruthen and Buchan ; Gembrook (P. 1883). Mount Bulla ; Neerim (P. 1884). Wendouree (M.R. 1889). Agnes River ; Snowy Creek (M.R. 1890). Mount Taylor Creek ; Mount Wills, in porphyritic dykes ; creeks flowing into Mitchell River (Cl.). Islands in Bass Straits ; Berwick ; Dry Forest Creek ; Lerderderg River ; Mount Gowar ; Myrtleford Creek ; Steiglitz ; Tangil River (P.R. Vol. 3). Pakenham ; Possum Hill (P.R. Vol. 4). Kiewa River (P.R. Vol. 5). Beenak ; Bishop's Creek ; Jingellic ; Black Mountains (P.R. Vol. 7).

CAT'S EYE.—(?) Beechworth and Yarra basin (M. 1866).

CERIUM PHOSPHATE.—Strathbogie Ranges ; Bethanga ; Gippsland (T.M.).

CERUSSITE.—In mineral veins throughout the colony (B.S. 1866). St. Arnaud, tolerably abundant in the silver reefs ; Nicholson's Reef, Castlemaine ; Glen Dhu Reef, Landsborough (M. 1866). Linton's ; Maryborough ; Pleasant Creek ; Gippsland (P. 1870). Between Koetong and Bright, with carbonates of copper (P. 1875-6). Harrierville, with galena (P. 1876). Bethanga (P. 1878). Swift's Creek (P. 1880-1). Murrindal (T.M.). Omeo, with silver and phosphate of lead (P.R. Vol. 7).

Wombat Creek ; Dargo ; Buchan ; Snowy River (Cl.). Ararat ; Dargo High Plains ; Murray River (M.H.). Dry Gully, near Mount Livingstone (Stirling in Trs. R.S. S.A., 1883-4).

CERVANTITE.—Costerfield (M. 1866). Heathcote ; Whroo ; Anderson's Creek ; Rutherglen ; Maryborough, and other places (B.S. 1866). Bacchus Marsh (P. 1873). Comadai Creek, Ballan (P. 1878). Queenstown ; Dunolly ; Maldon (T.M.). Ringwood ; Costerfield, with acicular crystals (M. 1870). Beechworth (P.R. Vol. 3). See also *Valentinite* and *Stibnite*.

CHABASITE.—Pentland Hills, in older basalt ; near Clunes, in basalt ; Malmsbury (M. 1866). Phillip Island, in older basalt ; near Frankston, on granitite (P. 1868). Gippsland (P. 1880). Maldon (P. 1882-3). Yarragon, in coal (P. 1886). Flinders (T.M.). Beechworth (P.R. Vol. 3). Brunswick quarries (P.R. Vol. 6). Ballan (M.R.F.).

CHALCANTHITE (Blue Vitriol).—Thompson River Copper Mine, sparingly in thin seams and crystallizations (M. 1866). Bethanga ; Ringwood (T.M.).

CHALCEDONY.—Near Keilor and Sunbury, coating cavities in basalt, tolerably frequent ; Phillip Island, nodules and pebbles on the shore ; Moroka Valley, Gippsland, as geodes ; Spring Creek, Beechworth (M. 1866). Creeks of Beechworth district (Bl. 1866). Waratah Bay (P. 1878). Buchan (Cl.). Heathcote, near Police Camp ; Phillip Island, sometimes with cavities containing yellow carbonate of lime, sometimes with empty cavities, sometimes with a vein of quartz running through it (N.M.). Chiltern ; Wallace's Creek ; Landsborough ; Mitchell River ; Richmond ; Tarra Range ; Turton's Creek ; Waterhouse Island in Bass Strait ; Bird Rock (P.R. Vol. 3). Near Berwick ; Avoca (M.R.F.).

CHALCOCITE (Redruthite).—Thompson River Copper Mine, small veins and patches, scales and grains in copper pyrites ; Steiglitz, impregnated in the rocks (M. 1866). Wombat Creek, Gippsland (Cl.). Livingstone Creek ; Buchan ; Snowy Creek ; Snowy River ; Nicholson

River; Murrindal River (B.S. 1872). Bendigo; Castlemaine (Sel. 1861). Cathcart (M.H.). Copper sulphides, without stating which sort, are recorded from Omeo (P. 1870). Maldon; Bruthen Creek; Broken River; North Gippsland (P. 1868). Beaufort; Beechworth; Blue Mountain; Bright; Crossover Creek; Heathcote (P.R. Vol. 3).

**CHALCOPYRITE.**—Thompson River Copper Mine, massive, in veins and patches; In most of the auriferous reefs at Castlemaine; Maldon; Steiglitz; Bendigo; Ballarat; St. Arnaud, etc. (M. 1866). Blue Mountain; Inglewood; Dunolly; Gippsland, etc. (B.S. 1866). Howqua River with galena (N.M.). Dargo High Plains (P. 1872). Gaffney's Creek; Dedduck, in quartz (P. 1873). Charlton (P. 1875-6). Bethanga, with carbonate of copper (P. 1877-8), Harcourt, on granite (P. 1882-3). Thomastown; Budgee, Gippsland; Yarrawonga (P.R. Vol. 7). Bruthen; Buchan; Deptford; Wombat Creek; Omeo (Cl.). Snowy Creek (P.R. Vol. 6). Majorca; Cathcart; Linton's (M.H.). Burke's Flat; Murrindal River (P.R. Vol. 3). Tongio West (M.R. 1896).

**CHALK.**—South-west corner of Victoria (Pr. R.S. Vic., 1891, p. 98).

**CHALYBITE.**—In some of the reefs at Maldon and St. Arnaud (M. 1866). Corinella, in coal shaft (N.M.). Hawthorn Creek, Tangil, earthy (P. 1884). Mirboo, impure; Fryerstown, coated with oxide of iron and pyrites (M.R. 1884). Jindivik (P. 1887). Mitta Mitta River; Ballarat (M.R. 1889). Daylesford (P. 1889). Warrenheip, concretionary (P. 1891). In satin-coloured masses with patches of manganese at Bruthen; Gelantipy; and Mount Taylor (Cl.). Barfold; South Clunes; Tourists' Creek (T.M.). Carbonate of iron is recorded from Beechworth; Buckland River; Gibbo River; Heathcote; Port Albert; Bendigo (P.R. Vol. 3). A carbonate of iron and manganese from Moe (P. 1880). Clay, iron ores from Avoca (P. 1874). See also *Sphaerosiderite*.

**CHERT.**—Lancefield District, along the boundary of the diorite greenstone (M. 1866). Near Heathcote; Beechworth;

Murrindal; near Melbourne (T.M.). Dandenong Ranges; Kingower; Mount Disappointment; Upper Wannon Falls; Bendigo (P.R. Vol. 3). Mount Useful (M.R.F.).

CHIASTOLITE.—See *Andalusite*.

CHLORIDE OF SILVER.—St. Arnaud (P. 1874). Gift Reef, Bethanga (P. 1877-8). Landsborough (P.R. Vol. 3).

CHLORITE.—Lady Gully Reef, and Wattle Flat, near Castlemaine; Fryerstown; near Yandoit, on the top of a high range (M. 1866). Long Gully, Bendigo (P. 1884). Mount Taylor, in porphyries (Cl.). Upper Loddon, coating imperfect quartz crystals (T.S.H.). Beechworth; Chiltern, in granite (E. J. Dunn in Trs. R.S. Vic., 1874). Snowy River; Talbot (P.R. Vol. 3). Near Heathcote, in diabase rocks (H. 1896). See *Leucoxine*.

CHLOROPAL (Hyd. Sil. of iron).—Sunbury, nodular masses, in decomposed basalt (N.M.). Deep Creek, in basalt; Mount Bullangarook, in basalt (Sel. 1861). Maldon (P.R. Vol. 3).

CHROME OCHRE.—In several reefs at Heathcote; Strathloddon, etc. (M. 1866). Pleasant Creek (M. 1870). Grampians, near Stawell (P. 1874). Buchan (Cl.). Beechworth; Benalla; Wangaratta (T.M.).

CHROMIC IRON.—Heathcote, in quartz reefs and quartzose rocks; Heathcote Creek; Argyle Gully, as fine black sand; Strathloddon; Riddell's Creek (M. 1866). Stockyard Creek, crystals (B.S. 1872). Franklin River, crystals; Creek beds at Heathcote, crystals (P. 1871). Near Corner Inlet; tributaries of Latrobe River, dull crystals (P. 1874). North Gippsland, massive (P. 1875-6). Bairnsdale, as sand (P. 1877-8). Mansfield (P.R. Vol. 7). Walhalla; Stawell (T.M.) Beechworth; Benalla; Mount Macedon; Mount Wellington (P.R. Vol. 3). Delatite River; Howqua River; Turton's Creek; Snowy River (P.R. Vol. 4).

CHROMIUM.—Costerfield (P.R. Vol. 3).

CHRYSOCOLLA.—Bloomfield's Gully, Omeo, impure, in vein stuff (B.S. 1872). Snowy Creek (P.R. Vol. 3). Silicate of copper is recorded from Dry Creek, near Mount Livingston (Stirling, in Trs. R.S.S.A. Vol. 7, 1883-4).



CHRYSOOLITE.—See *Olivine*.

CHRYSOPRASE.—Beechworth district (Bl. 1866). Woolshed Creek ; Sebastopol (Bl. in Trs. R.S. Vic., 1865-6).

CHRYSOTILE.—Mount Timbertop (P.R. Vol. 3).

CINNABAR.—See *Mercury*.

CLAYS.—Deep Creek, Bulla, from decomposition of granite (B.S. 1861). Dunolly ; near Kyneton ; other places (M. 1866). Lal Lal, bed three feet thick overlying lignite (N.M.). Preston ; Boroondara ; other places near Melbourne, suitable for bricks and pottery ; Lilydale (B.S. 1872). Sutton Range (Grange ? J.A.A.) (T.M.). Stawell, suitable for bricks (M.R. 1890). Morwell ; Darlmeura, suitable for earthenware ; Korkuperrimul, suitable for pottery ; Boolara (M.R. 1889). Huntly, suitable for terra-cotta (M.S. 1885). Beaufort, suitable for Staffordshire ware ; Jackson's Creek, near Sunbury, infusible clay ; near Smeaton (P. 1870). Bendigo ; Geelong (P. 1871). Nunawading, stands the fire well (P. 1872). Stawell ; Hawthorn, suitable for bricks ; Moorabool River, suitable for white ware (P. 1873). Moe ; Western Port, suitable for bricks (P. 1874). Strangways, suitable for crockery ; Fyansford ; Lauriston, suitable for pottery ; Daylesford, suitable for bricks and tiles ; Gaffney's Creek, could be made into paint (P. 1876). Gippsland, suitable for bath-brick and fire-brick (P. 1879-80). Bethanga, fire-clay (P. 1882-3). Tarwin River, suitable for tiles, earthenware, and white bricks (P. 1883). Ringwood, fire-clay ; Stawell, fire-clay ; Malvern ; Orrong Road, Prahran (P. 1884). Maldon ; Epsom (P. 1885). Frankston (P. 1886). Yapeen (P. 1887). Rushworth (P. 1889). Foster, fire-clay (P. 1890). Ballan ; Narracan Valley, fire-clay ; Gordons, fire-clay (P. 1891). Redesdale (T.M.). Footscray ; Western Port ; Cape Patterson ; Bass River ; Bruthen Creek ; Phillip Island ; Wangaratta ; Maryborough (P. 1868). Baringhup ; Inglewood ; Moe ; Warburton ; Woori Yaloak Creek ; Upper Yarra ; Brighton ; Northcote (P.R. Vol. 3). See also *fullers' earth*, *lithomarge*, *halloysite*, and other varieties of *clay*.

- CLAY IRON ORE.—See *chalybite* and *sphaerosiderite*.
- COAL, BROWN COAL, AND LIGNITE.—Special reports on the coal-fields of Victoria, containing very much useful information, are issued from time to time by the Mines Department. For a list of the principal localities see M.H., p. 34.
- COBALT.—See *asbolite*.
- COCCOLITE (var. of augite).—In basaltic rocks (Sel. 1861). Camperdown; Daylesford; Mount Franklin (P.R. Vol. 3).
- COLOPHONITE (Wine-yellow garnet).—Ovens (Bl. in Trs. R.S Vic., 1865-6).
- COLUMBITE.—Maldon (P.R. Vol. 3).
- COMPTONITE.—See *Thomsonite*.
- COPALINE.—Bass River, in lignite beds; Coal Creek, not *in situ* (N.M.).
- COPIAPITE.—Near Point Addis, in tertiary beds (M. 1866). Spring Creek, near Geelong, probably results from the decomposition of iron pyrites (N.M.), analysis by Mr. R. Daintree in Catalogue of National Museum, Melbourne, 1868. Mornington (T.M.). Castlemaine (?), brownish crusts and stains on spoil and pyrites heaps (T.S.H.). Basic sulphate of iron is also recorded from Buninyong with iron-alum (T.M.). Angahook (B.S. 1872). See *Melanterite*.
- COPPERAS.—See *Melanterite*.
- COPPER (native).—Thompson River, rounded pieces in the wash; Thompson River Copper Mine; Wilson's Reef, St. Arnaud; Specimen Gully, Castlemaine, thin small scales; Steiglitz; Louisa Ranges, Crooked River (M. 1866). Rodney Mine, near Ballarat, filamentous; Malmsbury, basalt quarries, small grains in sphaerosiderite (B.S. 1872). Thompson River, with moss copper (N.M.). Clunes, in tertiary drifts (M. 1870). Sebastopol and Egerton, thin strings and arborescent forms in silurian shales (P. 1870), see note by Mr. J. C. Newbery in the same volume. Bethanga, in quartz; Richmond, specks on basalt (P. 1877-8). Stawell; Blackwood; Ballarat, in bed-rock under the deep leads

(P. 1871). Footscray, a mass several pounds weight in a basalt quarry (P. 1873). Creswick; Mitta Mitta; Cooper's Creek (M.H.). Avoca, deep lead; Beechworth; Landsborough (P.R. Vol. 3). Magpie, near Ballarat, small specks throughout the quartz (Pd.). *Copper ores*, without naming which kind, are recorded from between Snowy River and Bendoc; Granite Flat, Snowy River (P. 1871). County Millewa; Spring Creek, near Buchan (P. 1884). You Yangs (P.R. Vol. 7). On a branch of the Wentworth River (Cl.). Costerfield and Heathcote, antimonial; Beaufort; Bonang; Bright; Mount Wellington (P.R. Vol. 3).

**CORUNDUM** (black).—Nearly all our gold fields, in semi-angular or rounded pieces (M. 1866). Colac (P. 1871). Phillip Island, in older basalt (P. 1877-8). Analysis in Catalogue National Museum, Melbourne, 1868; Daylesford; Benalla; Mount Blackwood (T.M.). Mansfield; Dandenong (P.R. Vol. 3).

**COVELLINE**.—Steiglitz and Dunolly, in the reefs; Specimen Gully Reef, Castlemaine; Glen Dhu Reef, Landsborough; Crooked River, thin scaly coatings (M. 1866). Scotchman's Gully Reef, Castlemaine; Harcourt, coating chalcopyrite (T.S.H.). Bendigo (Sel. 1861). Maldon (T.M.). See note to *Chalcocite*.

**CUPRITE**.—Thompson River Copper Mine (M. 1866). Steiglitz (Sel. 1861). Bethanga (P.R. Vol. 6).

**CUPROPLUMBITE**.—Costerfield antimony reef, small, scale-like crystals, very rare (M. 1866). McIvor (Sel. 1861).

**DAMOURITE**.—"A mineral whose characters accord well with damourite was found in crystals of cairngorm at Bradford Lead, Maldon" (M. 1870). See *muscovite*.

**DARLINGITE** (species of lydianite).—Ovens district (Bl. in Trs. R.S. Vic. 1866).

**DIALLOGITE**.—Port Phillip Company's Mine, Clunes, in crevices and cavities of the reefs, forming crusts over quartz and psilomelane (M. 1866). See *Rhodochrosite*.

**DIATOMACEOUS EARTH**.—See Infusorial earth.

**DIAMOND**.—In the creeks of the Beechworth district, from  $\frac{1}{8}$  to  $2\frac{1}{2}$  carats (M. 1866). One of 17.64 carats was reported

in 1864 (B.S. 1866). North-East Gippsland? (Bl. 1866). Near Bendigo? (P. 1870). Mansfield (P.R. Vol. 3). Toombullup, 25 miles from Benalla ("Argus," 5th May, 1896).

**DITTMARITE.**—Skipton Caves, a mineral new to science was recorded under this name by Mr. McIvor, in "Chemical News," 13th May, 1889.

**DOLOMITE.**—Maldon, drusy coatings in joints of metamorphic sandstone; Howqua district, massive in some reefs (M. 1866). Broadmeadows, with brown hematite, under the basalt (M. 1870). For analysis see M. 1870. Near Ballan (N.M.). Ajax and Wattle Gully reefs, Castlemaine; a white, earthy soft substance, consisting of carbonates of lime and magnesia, at Barker's Creek quarries; Castlemaine, a magnesian-lime cement in some of the old gravels (T.S.H.). Maldon, with calcite, vivianite, apatite, scheelite, etc. (P. 1875-6). Phillip Island, in older basalt, pseudomorphs after aragonite; Mansfield (P. 1877-8). Waratah Bay (P. 1878). Toongabbie (P. 1882-3). Geelong (P. 1885). Daylesford (P. 1889). Ballarat (M.R. 1889). Bendigo (P. 1888). Gaffney's Creek; Buchan; Walhalla (T.M.). Woods Point; Beechworth; Clunes; Harrow; Mount Timbertop (P.R. Vol. 3). Loyola (P.R. Vol. 4). *Blue dolomite* at Woodford (Bradford? J.A.A.), Victoria, on vitreous quartz (G.S. N.S.W. Vol. 4, p. 141). Maldon (P. 1875-6). See also *Brown Spar*.

**ELECTRUM.**—Swift's Creek, Omeo (Cl.).

**EMBOLITE.**—The silver mines at St. Arnaud, in cracks and cavities of the quartz (M. 1866).

**ENHYDROS.**—Beechworth (P. 1875-6). Read the following papers on enhydros:—A. Liversidge, in R.A.M.S. Vol. 2, No. 3, p. 35; T. Cooksey, in R.A.M.S. Vol. 2, No. 6, p. 92; E. J. Dunn, in Trs. R.S. Vic., 1874; and G. Foord, in the same volume.

**ENSTATITE.**—Buchan, in diabase rock (Howitt in Trs. R.S. Vic., Vol. 18). Heathcote, in diabase rock (Catalogue T.M. 1894, p. 33).

**EPIDOTE**—Nuggetty Gully, Talbot, with quartz and flesh-coloured orthoclase; south-east of Tarilta, dense crystalline rock, rare form (M. 1870). Analysis in the same book. Near Buchan (M.R. 1889). Dividing Range, Gippsland; Omeo Road, Gippsland, vein in syenite (T.M.). Snowy River; Dry Hills, Gippsland (P.R. Vol. 3). Near Heathcote, in granite, and in altered diabase rocks (H. 1896). Snowy Bluff (M.R.F.).

**EPSOMITE**.—In tertiary, mesozoic, and silurian rocks near Geelong; Bacchus Marsh; Cape Otway, etc.; Snow-flake efflorescences in quartz reefs as at Clunes; Maldon, etc. (M. 1866). Argus Hill Mine, near Castlemaine, thick incrustation in old drives (T.S.H.). Bendigo; Growler's Creek Ranges; Stawell (P.R. Vol. 3).

**ERUBESCITE**.—See *Bornite*.

**ERYTHRITE**.—Dargo, peach-coloured crystals in quartz (Cl.).

**ESSONITE** (Cinnamon Stone).—Ovens (Trs. R.S. Vic., 1866).

**FAHLERZ**.—See *Tetrahedrite*.

**FELSPAR**.—No species named. Swift's Creek, in a dyke (M.S. 1884). Lal Lal (P. 1885). Beechworth (M.R. 1889). Glassy felspar, Daylesford, in basalt (M.S. 1887). See also *orthoclase*, *oligoclase*, *labradorite*, and other species of felspar.

**FERRO-CALCITE**.—Barfold Falls, Campaspe River, in basalt, (M. 1866). Saltwater River; Mitchell's Falls (N.M.). Analysis in Catalogue (N.M. 1868). Collingwood (Trs. R.S. Vic., Vol. 16, 1880, p. 144).

**FIBROLITE**.—Moroka Valley, Gippsland; near Beechworth, in granite (M. 1870). Dandenong Ranges; Northern Gippsland (B.S. 1872). Crooked River (Cl.). Swift's Creek (P. 1878). Geelong; Gippsland; Yackandandah (T.M.). Dargo River (P.R. Vol. 3). For analysis see P. 1872.

**FLINT**.—Cape Otway coast; Warrnambool coast; Phillip Island (N.M.) Near Dandenong (M. 1870). Portland Bay; Flinders; Emerald diggings; Bed of Yarra (T.M.), Griffith's Point (P.R. Vol. 3).

**FLOS-FERRI**.—Richmond quarries, lining cavities in basalt (N.M.).

- FLUOR-SPAR.—Near Beechworth, crystals in narrow veins and small patches in brecciated dyke (M. 1870). Eaglehawk Reef, Maldon (P. 1880-1). Chiltern, in granite; Beechworth, in granite (T.M.).
- FOSSIL-WOOD.—See *silicified wood*.
- FRANKLINITE.—Tambo River and Nicholson River, in black sand (Cl.).
- FULLER'S EARTH.—Clifton Springs, near Drysdale, a large deposit (B.S. 1872). Redesdale, seams of silicate of alumina and magnesia under stiff clay, might be used as fuller's earth (N.M.). Lilydale (B.S. 1872).
- GALENA.—Steiglitz; Castlemaine; Bendigo; Maryborough, in quartz reefs (Sel. 1861). Wilson's Reef and Silver Reef, St. Arnaud, veins and patches; impregnated in most, perhaps all, auriferous quartz reefs (M. 1866). In the mineral veins throughout the colony (B.S. 1866). Dargo High Plains, with cerussite, chalcopyrite, etc.; Dedduck River; Snowy River; Chinaman's Flat, Maryborough, alloy of lead and gold; Eastern Gippsland, auriferous (B.S. 1872). Scotchman's Gully, Castlemaine, in grains (T.S.H.). Wombat Creek, crystals and massive; Buchan, crystals and granular; Swift's Creek; Haunted Stream; Dargo (Cl.). Rushworth (P.R Vol. 7). Moyston; Pleasant Creek; Morse's Creek; Yackandandah; Maldon; Glen Dhu (P. 1868). Landsborough, argentiferous; Blackwood; Linton's, said to be near a bismuth reef (P. 1870). Near Percydale (P. 1871). Buchan and Corner Inlet, antimonial; Dargo River (P. 1872). Murrindal, antimonial; Back Creek (P. 1873). Maldon (P. 1874). Harrietville, with cerussite; Stockyard Creek (P. 1876). Bethanga, argentiferous (P. 1878). Champion Bay (P. 1879-80). Bendoc (P. 1884). You Yangs; Zulu Creek (M.R. 1889). Ararat; Avoca; Beechworth; Berlin; Chiltern; Crooked River; Gordons; Kingower; Mount Useful; Omeo; Stawell; Tarnagulla; Murrindal River; Corner Inlet (M.H.). Blue Mountain; Daylesford; Dunolly; Gibbo River; Pyrenees; Reedy Creek; Anderson's Creek; Donovan's Creek; Kilmore; Bendigo;

Snowy Creek ; Sunbury ; Thirty-mile Creek ; Costerfield, antimonial (P.R. Vol. 3). Casterton, argentiferous ; Buchan, argentiferous (M.R. 1896).

GARNET.—Reid's Creek ; Woolshed ; Sebastopol ; Eldorado ; in the gold-drifts ; Longwood, in diorite dyke ; Lady Franklin Mountain, in euritic dyke ; Barnawartha Creek (M. 1866). Near Lilydale ; head of Woori Yaloak Creek (B.S. 1872). Eaglehawk Reef, Maldon, in a diallage dyke (J. Hornsby, teste T.S.H.). Maldon, in granite (J. Dennant, teste T.S.H.). Harcourt, in granite (T.S.H.). Livingstone Creek ; Mount Taylor ; Creeks of Eastern Gippsland from Mount Taylor, with menaccanite (Cl.). Bradford Lead, Maldon, in quartz ; Hill's Corner, Baynton (N.M.) North-east of Berwick, in the creeks ; Mount Timbertop (M. 1870). Barker's Creek, Castlemaine, in a mica-schistlike rock, in the gold-drift (M. 1866). Blackwood ; Dry Creek ; near Mansfield ; Ballarat (P. 1870). Bethanga (P. 1881). Corner Inlet (P. 1876). Mount Buller (P. 1877-8). Swift's Creek, in granite (P. 1878). Buxton (M.R. 1889). Benalla, crystals of green garnet in felspathic rock (P. 1874). Chiltern ; Euroa ; Mount Korong ; Rockpoint ; Alexandra ; Kingower ; Lilydale ; Longwood ; Sassafra Creek (P.R. Vol. 3). Howqua River (P.R. Vol. 4). See also *Essonite*, *Pyrope*, *Colophonite*, etc. "The Victorian garnets seem all to be almandine" (Bl. 1866).

GLAUCONITE.—Bruthen (Cl.). Snowy River Bluff (H., teste Cl.). Spring Creek, south of Geelong (G. B. Pritchard in "Remarks on the Tertiaries of Australia," South Australian School of Mines). Green earth forms a constituent of some of the basalts (Catalogue T.M. 1894, p. 44).

GMELINITE.—Phillip Island, in basalt (M. 1866). Richmond, in basalt (Sel. 1861). Flinders (T.M.).

GOLD.—For a list of localities, and for modes of occurrence, see the following works, which furnish full particulars :—  
"Goldfields of Victoria," by R. Brough Smyth. Essay on "Mining and Mineral Statistics of Victoria," in the

Official Record of the Intercolonial Exhibition, Melbourne, 1866. "Miners' Handbook," issued by the Mines Department, Melbourne. A tabular record of the most remarkable specimens will be found in the Catalogue of the Victorian Exhibition, 1861, and lists of other specimens, found since that date, are in the "Progress Reports" of the Geological Survey. A list of nuggets and large masses of gold found *in situ* in reefs, by W. Nicholas, is in the Report and Statistics of the Mining Department for the quarter ending 30th September, 1890, pp. 24-27.

GRAMMATITE.—Eaglehawk Reef, Maldon (T.M.). See *tremolite*.

GRAPHITE.—Ovens gold fields (Sel. 1861). Blackwood (?); Reefs of St. Arnaud and Mount Pleasant districts, shaly substance impregnated with carbonaceous matter, in lumps and casings; Golden Point Gutter, Ballarat, true graphite, inferior quality (M. 1866). Beechworth (Bl. in Trs. R.S. Vic. 1866). For report by Mr. J. C. Newbery on sample from Ballarat, see M.S. 1875-6. Omeo (M.S. 1885). Mallee (P.R. Vol. 7). Mount Wills (Cl.). Castlemaine district, impure, coating slates in vicinity of quartz reefs (T.S.H.). Daylesford (T.M.). Upper Murray (P.R. Vol. 3). Dargo, in dyke rock (H. in Trs. R.S. Vic., 1887).

GUANO.—Caves at Cape Otway (P. 1876). For analysis by Mr. Newbery see M.S. 1876. Skipton Caves; Hamilton; Portland; Warrnambool ("Chem. News," 13th May, 1887).

GUMBELITE (?).—Castlemaine district, replacing graptolites (T.S.H.).

GYPSUM.—Abundant in thin veins, patches, and concretionary masses in the tertiary sandstones and clays along the coast from Jan Juc to Point Addis; Cape Otway district; tertiary beds all over the Murray basin; in the saline deposits of lakes and lagoons; raised beaches and swamps near the sea, as Batman's Swamp; Mount Consultation, Castlemaine, in clays overlying the gravels; Sandy Creek, Tarrengower; Ballarat deep leads; in the Western district and in the banks of the Murray River



casts of shells occur consisting of selenite (M. 1866). Mornington, in blue clay; Spring Plains, in bluish surface clay (M. 1870). Daylesford (B.S. 1872). Lake Tyers (P. 1876). Kerang (P. 1878). Geelong (P. 1879-80). Carisbrook (P. 1882-3). Lake Hindmarsh (M.S. 1885). Elwood Swamp, St. Kilda (P. 1889). Lake Boga (M.R. 1890). Mount Emu Creek (T.M.). Maryborough (P.R. Vol. 7). Barwon Heads; Korong; Queenscliff; Collingwood basalt quarries; near Portland (T.M.). Alexandra; Bacchus Marsh; Beechworth; Growler's Creek; Inglewood; Lake Connewarre; Moonee Ponds; Salt Lakes; St. Arnaud; Stawell; Bendigo (P.R. Vol. 3). Korong district (M.R.F.).

HALITE.—See *Common Salt*.

HALLOYSITE.—The partly-decomposed basalts and the clays of the gold-drifts, and the fossiliferous tertiaries around the coast generally, contain nodules of amorphous silicates, some of them resembling halloysite (M. 1866). Star Hill, Woods Point, in quartz veins; Energetic Reef, Lauriston; Alexandra, in quartz reefs (M. 1870). Crossover, Gippsland (P. 1880). Beechworth; North Melbourne, from older basalt; Wandin Yaloak (T.M.). Western Port Bay, a mineral resembling halloysite (Catalogue T.M., 1894).

HANNAYITE.—Skipton Caves and near Warrnambool, in guano deposits (Chem. News, 13th May, 1887). For analysis, see the same journal.

HEMATITE.—Stony Creek, Western Port; Bennison's Flat (P. 1874). Wilson's Promontory (M.S. 1875-6). Snowy River (P. 1876). Mount Willi, Gippsland (P. 1888). Mansfield (M.R. 1889). Gippsland (T.M.). Nowa Nowa; Mount Taylor; Livingstone Creek (Cl.). Dargo, in dyke rock (H. in Trs. R.S. Vic., 1887). *Red oxide* of iron is recorded from Bald Hills; Brighton; Bruthen Creek; Campaspe River; Cape Roadknight; Colac; Godfrey's Creek; Mac's Creek; McDonald's track; Pearl Point; Woods Point; Plenty River; Ringwood; Snowy Creek; Swan Island; Bonang (P.R. Vol. 3). See also *specular iron* and *red ochre*.

- HERSCHELLITE.**—Richmond basalt quarries, double hexagonal pyramids, or druses, or macles, or groups (N.M.) For analysis see M. 1870. See also Mr. Newbery's report in Catalogue T.M. 1894. Clunes (P.R. Vol. 3).
- HETEROSITE** (phosphate of iron and manganese).—Mount Wills (T.M.).
- HEULANDITE.**—Tiverton Reef, Maldon, drusy coatings in joints of the quartz (M. 1870). Lisle's Reef and Lennon's Reef, Tarrengower, in crevices and joints of metamorphic sandstone (M. 1866). All the specimens examined show tabular crystals of heavy spar (M. 1870). Phillip Island, in older basalt; Frankston, on granite (P. 1877-8).
- HORNBLende.**—Anakies, crystals in scoriaceous basalt; Castlemaine, in basic dyke; Mount Alexander; Lancefield; McIvor, etc., in granite (M. 1866). Beechworth, in the tin sands (B.S. 1866). Fiddler's Reef, Forest Creek (N.M.). Phillip Island, in older basalt; Eaglehawk Reef, Maldon (P. 1877-8). Camperdown; Gippsland (T.M.). Howqua River; Jameson (M.R. 1884). Dargo, in igneous rocks (H. in Trs. R.S. Vic., 1887). Wattle Gully; Burn's Reef, in basic dykes; Eaglehawk Reef, Maldon, a green variety (T.S.H.). Mount Franklin (P.R. Vol. 3). Mount Buller (P.R. Vol. 4). For analysis of the Anakies specimen see Catalogue N.M., 1868. Near Heathcote, in granite, diorite, and diabase rocks (H. 1896).
- HORNSTONE.**—See *Chert*.
- HYACINTH.**—Ballarat; near Daylesford; Crooked River; abundant on nearly all the gold-fields (Bl. 1866). Dandenong; Campaspe River near Redesdale, in black sand in the drift resting on basalt (N.M.). See *Zircon*.
- HYALITE.**—Cavities in basalt of various localities (Sel. 1861). Malmsbury; Kyneton; Gisborne; Baringhup, etc., drop-like incrustations in basalt cavities (M. 1866). Kilmore, coating basalt (N.M.). Moe (P. 1880). Collingwood (P. 1889). Gelantipy; Omeo; Mitchell River (Cl.). Near Geelong; Mount Hepburn; basalt cavities at Learmonth (T.M.). Beechworth; Magnet

Hill, Baynton's; Mount Franklin; Redesdale; Stawell (P.R. Vol. 3).

HYDRATE OF ALUMINA.—Coleraine (P.R. Vol. 4). Analysis on page 163 of same volume.

HYDROMAGNESITE.—Collingwood basalt quarries (T.M.).

HYDROPHANE.—Stawell (P.R. Vol. 3).

ILMENITE.—Yarra basin, with stream tin (Bl. 1866). Near Castlemaine, as black sand in the alluvial deposits draining from the basalt (T.S.H.). Near Heathcote, in diabase rocks (H. 1896). See *titaniferous iron*.

INFUSORIAL EARTH.—(Tripolite, Randanite, Diatomaceous earth). Talbot, found in all stages, from the pure, soft, snow-white silica containing the well-known infusorial forms, to masses resembling opal and chalcedony (P. 1873). For analysis see P. 1872 and M.S. 1875-6. West Melbourne Swamp, impure, clayey (P. 1878). Middle Creek, Radborough (P. 1884). Brunswick (P. 1885). Lillicur (M.S. 1885). Maryborough (M.S. 1886). Gippsland (M.R. 1886). Campaspe River, near Redesdale, in clay in the gold-drift; Lancelfield; Sebastopol; Amherst (T.M.). Alexandra; Daylesford (P.R. Vol. 3). See paper by F. M. Krausé in Trs. R.S. Vic., 1887.

IOLITE.—Traawool, grains and crystals in granite; Maldon, in pegmatite (T.M.).

IRIDOSMINE.—Reported from Yarra goldfields, fine steel-grey particles in "heavy sand" (M. 1866).

IRON (native).—Western Port district, with nickel, in masses (B.S. 1861). Two large masses, one of half a ton, and the other about four tons in weight, and several smaller pieces were found in the neighbourhood of Cranbourne (M. 1866). Langwarrin, near Frankston (P. 1887). Smythesdale (P.R. Vol. 7). Near Daylesford (M.R. 1889). In the basalts of Ballarat (Liversidge, in Minerals of New South Wales).

IRON ORES.—Iron ores, without naming the species, are recorded from Castlemaine and Bendigo (B.S. 1861). Thompson River (P. 1878). Near Bairnsdale (P. 1881). Goodman's Creek; Jan Juc (M.S. 1884). Grantville (M.S. 1885). Grampians (M.S. 1886). Ironstone is recorded

from Glassy Creek, Western Port (P. 1878). Brighton Beach (P. 1880). Mount Egerton; Otway Forest; Junction of Bendigo Creek and Back Creek (P. 1877-8). Clayey and arenaceous ironstone occurs at Avoca; Ballarat; Buninyong; Campaspe River; Cape Road-knight; Eddington; Frankston; Guildford; Little River; Loddon Valley; Malmsbury; Mooroolbark River; Mordialloc; Murray River; Bendigo; St. Arnaud; Steiglitz; Sunbury; Traralgon; Werribee River (P.R. Vol. 3). Much information on the occurrence of iron ores will be found in M.H. See *limonite*, etc.

ISERINE.—“Generally distributed” (Sel. 1861). See *tituniferous iron*.

JAMESONITE.—Maldon, bunches of crystals with molybdenum in quartz, a considerable distance from the antimony deposits (P. 1878). Buchan, argentiferous (P. 1883). Dargo; Murindal (Cl.).

JARGON.—See *Zircon*.

JASPER.—Cape Otway Coast, near Gellibrand River, common as pebbles; in drifts of Yarra basin and at Beechworth (M. 1866). Common along the western sea coast and in some of the drifts; Moroka Valley (N.M.). Tarwin River (P. 1878). Briagolong; Mansfield (P. 1887). Buchan; Goulburn River; Koroit Creek; Murrindal; Malmsbury; banded variety at Beechworth (T.M.). Lake Tyers; Snowy River; Tarra Range; Swan Island (P.R. Vol. 3). Opal jasper from the basalt at Riddell's Creek; Sunbury; Gelantipy; Bullengarook (N.M.). For description of Sunbury specimens see N.M. Near Melbourne, in basalt (Sel. 1861).

JET.—Lal Lal (P.R. Vol. 3).

KAOLIN.—See *Clays*.

KERMESITE.—Morning Star Reef, Woods Point, in powdery coatings and crystals, very rare (M. 1866). Ringwood (T.M.).

LABRADORITE.—Malmsbury, in porphyritic dolerite; Table Hill, near Guildford; Loddon basaltic outliers generally (M. 1866). Barrabool Hills (P.R. Vol. 3). In all our labradorite rocks, diabase and gabbro (Catalogue T.M.,

p. 32). In nearly all our newer and older basalts (Catalogue T.M., pp. 34 and 40). Near Heathcote, in diabase rocks (H. 1896).

LAMPADITE.—Wombat Creek, black earthy masses (Cl.).

LEAD AND GOLD ALLOY.—Landsborough; Maryborough (P.R. Vol. 3).

LEAD (native).—Mount Greenock, in drifts; Avoca, in deep lead, small quantities (M. 1866). Talbot, in the auriferous tertiaries (B.S. 1866). Anderson's Creek, in quartz; Linton's, with copper and zinc (P.R. Vol. 7). Majorca (P.R. Vol. 3).

LEAD OCHRE.—Majorca (P.R. Vol. 3).

LEDERERITE.—Richmond, in basalt (Sel. 1861). See *Gmelinite*.

LEUCOPYRITE.—Deptford; Mount Baldhead; Dargo; Omeo; Wombat Creek (Cl.).

LEUCOXINE.—Near Heathcote, in diabase rocks (H. 1896).

LIGNITE.—See note under *Coul*.

LIMONITE.—Veins and concretions in the silurian rocks of all the gold-fields generally; in the tertiary rocks round the sea coast; in veins of quartz reefs; as a cement in auriferous conglomerates; Bacchus Marsh; Lake Connewarre; Batman's Swamp; basaltic plain and hill slopes of the Loddon Valley, pea-like, or shot-like; margin of the Murray basin; valleys of Werribee, Loddon, Little, and Campaspe Rivers (M. 1866). St. Arnaud (B.S. 1866). Wattle Gully, pseudomorphs after pyrites; Bolivia Hill, iridescent film on rocks (T.S.H.). Nicholson River; Clifton Creek; Boggy Creek; Bairnsdale; Buchan; Omeo (Cl.). Pascoe Vale; near Lancefield; Home Creek; Queensferry; Western Port; South Muckleford (N.M.). Moonee Ponds; Mordialloc; Bruthen Creek (P. 1868). Lal Lal; wherever decomposed basalt exists; Seymour; Steiglitz (P. 1873). Bendigo; Sebastopol; Crossover Creek; Stockyard Creek; Barwon River and Heads (P. 1874). Near Newstead, lode 150 feet wide; Daylesford; Traralgon; Lake Tyers; Wilson's Promontory (M.S. 1875-6). Snowy River; Whisky Creek; Fryer's Creek; north-east of Victoria; Blackwood; Dande-

nong; Strath Creek (P. 1878). Near Glenmaggie (P. 1880-1). Colac (P. 1880). Creswick (P. 1881). Granya; Yarrawonga (P. 1882-3). Near Queenstown (P. 1884). Jan Juc (P. 1885). Wombat Creek (P. 1886). Mount Bulla (P. 1889). Byaduc; Western District; Alexandria (M.S. 1885). Heathcote (M.S. 1886). Omeo, iridescent (M.S. 1887). Bulla Bulla (T. M.). Mansfield; Myrtleford; Warracknabeal; Nagambie; Merton; Neereman; Barrabool; Gembrook; Warrnambool; Murroon; Puebla, iridescent; Drouin (M.R. 1889). *Yellow ochre* from Snowy Creek; Blackwood; Anderson's Inlet; Tarwin River; Bacchus Marsh; Maldon (P. 1874). Gaffney's Creek (P.R. Vol. 4). *Oxide of iron* from South Wandin (M.S. 1887). Rushworth; Howqua; Darlingford; Molesworth (P.R. Vol. 7). *Brown iron ore* from Axedale; Ballarat; Beechworth; Benalla; Beauman's Flat; Berwick; Charlton; Clunes; Coal Creek; Coleraine; Frankston; Geelong; Goulburn River; Grampians; Huntly; Indigo; Lake Lonsdale; Lintons; Malmesbury; McIntyre's diggings; Royal Park, Melbourne; Saltwater River; Mount Black; Mount William; Myer's Creek; Porcupine Flat; Swan Island; Tarwin River; Wahgunyah; Warrandyte; Tarra Range (P.R. Vol. 3). See *iron ores*.

LITHOMARGE.—Beechworth (B.S. 1872). Anderson's Creek; Mirboo (P.R. Vol. 7). Stawell (P.R. Vol. 3).

LOLLINGITE.—Nuggety Reef, Maldon (P.R. Vol. 3).

LYDIANSTONE, LYDIANITE, LYDITE.—See *Basanite*.

MAGNESITE.—Bulla Bulla, in Kaolin deposits; Heathcote; near Geelong, in tertiary clays; Bacchus Marsh; Western Port and other places; banks of Loddon River, near Newstead, pure; Hard Hills, near junction of Loddon River and Jim Crow Creek; near Heathcote, in a vein with Selwynite (N.M.). Many places in the Bendigo district (P. 1871). Strangways and other places where Kaolin occurs (B.S. 1872). Steiglitz and Fryerstown, with Kaolin (P. 1874). Collingwood quarries (P. 1880). Tarnagulla (P. 1885). Campbell's

Creek ; Castlemaine ; Beechworth (P. 1886). Rushworth ; Glenroy, in basalt (P. 1889). Charlotte Plains ; Baynton ; Dunolly ; Majorca ; Richmond ; Gippsland (T.M.). Kampf's Gully, Castlemaine (T.S.H.) Maldon (J. Hornsby, teste T.S.H.). Stawell (P.R. Vol. 3). Magnesium carbonate near Heathcote, in diabase rocks (H. 1896).

**MAGNETITE.**—In the washing stuff of the gold-drifts, abundant, grains and crystals (M. 1866). Horse Hill, in drift from basalt ; Baynton, near Maldon, octahedra in basalt, exhibits polarity (N.M.). Near Daylesford ; Ballarat ; Buchan (M.R. 1889). Nowa Nowa (Cl.). Dargo, in basalt (H., teste Cl.). Castlemaine, in deposits draining from basalt (T.S.H.). *Magnetic iron sand* from Yarra basin (N.M.). Beechworth ; Gippsland (P. 1870). Gisborne ; Lockwood ; Kangaroo Flat ; Flemington ; many creeks in the colony (P. 1872). Tarwin Creek (P. 1873). Mansfield (M.S. 1875-6). Bruthen (P. 1884). Crossover Creek ; Western branch of Yarra River (M.S. 1884). Bonang ; Brighton ; Campaspe River ; Cudgewa Creek ; Colac ; Dandenong ; Dargo High Plain ; Koetong ; Snowy Creek ; Stony Creek ; Tarra Tarra (M.H.). Bendigo (P.R. Vol 3). Near Heathcote, in granite and diabase rocks (H. 1896).

**MALACHITE.**—Thompson River Copper Mine ; Steiglitz and Penrith Creek, in cavities of the reefs ; St. Arnaud, in the silver reefs ; Landsborough ; Nicholson Reef, Castle ; maine (M. 1866). Blue Mountain ; Bendigo ; Inglewood ; Dunolly ; Gippsland (B.S. 1866). Dedduck, in quartz vein ; Crooked River (P. 1873). Between Koetong and Bright ; Granite Flat ; Snowy Creek, in quartz (M.S. 1875-6). Snowy River ; Percydale (M.S. 1886). Mount Korong (T.M.). Dargo ; Buchan (C.L.). Scotchman's Gully, near Castlemaine, small earthy patches (T.S.H.). Bethanga (M.H.).

**MALDONITE.**—Nuggetty Reef, Maldon (M. 1870). Eaglehawk Reef, Maldon, in the quartz lodes (M.S. 1875-6). For description see M. 1870.

**MANGANESE.**—Violet Town, in quartz; Sunday Creek (P.R. Vol. 7). *Manganese oxides*, without stating which kind, are recorded from Bairnsdale (P. 1872). Merton; Yea; Alexandra; Ararat; (P. 1868). Golton Golton, in the Grampians (P. 1874). *Manganese ores* from St. Arnaud, with silver ores (B.S. 1866). Clunes; many parts of the colony (P. 1871). Avoca, with tourmaline and quartz (P. 1876). See Mr. Newbery's report in the same volume. Costerfield (P. 1878). Jan Juc; Wallan; Eltham (P. 1885). Sale (M.R. 1887). Molesworth; Walhalla; Mansfield (M.R. 1890). Little Yarra River; Acheron River (P.R. Vol. 7). Kangaroo Ground, a vein eighteen inches thick (P. 1884). Mount Brown (M.R. 1889). *Manganese conglomerate* from Majorca (T.M.). *Black manganese ore* from Beaufort; Benalla; Cathcart; Chiltern; Daylesford; Godfrey's Creek; Griffith's Point; Linton's; Mitchell River; Mount Useful; Plenty River; Bendigo; Seymour; Skipton; Strangways; Stawell; Sunbury; Talbot; Lower Tangil; Tarilta; Tarra Range; Wandilligong; Warrandyte (P.R. Vol. 3).

**MANGANITE.**—Mount Taylor, Gippsland (Cl.).

**MARCASITE.**—Generally distributed (Sel. 1861). Woodside, Gippsland (P.R. Vol. 7). Omeo; Wombat Creek, Gippsland (Cl.). Lorne (T.M.).

**MEERSCHAUM.**—See *Allophane*.

**MELACONITE.**—Thompson River Copper Mine (M. 1866). Wombat Creek, Gippsland (Cl.). Bethanga (M.H.). Beechworth; Upper Murray (P.R. Vol. 3).

**MELANTERITE.**—Beehive Reef, Maldon, crystals (M. 1866). Briarolong (P. 1887). Ringwood (T.M.). Durham Lead; Leigh River, efflorescence on lignite (N.M.). *Sulphate of iron* from Cape Roadknight; Daylesford; Point Addis (P.R. Vol. 3).

**MENACCANITE.**—In the gold-drifts of perhaps all our gold fields (M. 1866). Creeks flowing from Mount Taylor; alluvial beds of Tambo and Nicholson Rivers (Cl.). Yarra River (T.M.). See *titaniferous iron*.



MERCURY.—Swamp Creek, a tributary of the Wentworth River, Gippsland, in alluvial (Jorgensen, teste Cl.). The “Age,” 12th March, 1895, reported the finding of cinnabar and free mercury in considerable quantities at Jameson River. The “Argus,” 21st January, 1896, reported ores of mercury in the neighbourhood of Beaconsfield.

MESITITE (carbonate of iron and magnesia).—Bendigo (T.M.).

MESOLITE.—Clunes, in basalt from a shaft, with calcite, etc. (M. 1870). Richmond quarries (P. 1877-8). South Clunes (P. 1879-80). Near Melbourne; Collingwood (T.M.). Preston Vale (P.R. Vol. 3).

MESOTYPE.—See *Natrolite*.

MICA (no species named).—Loddon Plain; Muckleford Creek; Castlemaine; Bendigo; Stawell (T.M.). Near Harrow; Glenelg; various localities (Sel. 1861). Bethanga (P. 1889). Phillip Island in older basalt (P. 1877-8). Inglewood (P. 1891). Dargo, in dyke rock (H. in Trs. R.S. Vic., 1887). *Green mica*, Beechworth, in granite (Trs. R.S. Vic., 1874). *Colourless mica*, near Heathcote, in granite (H. 1896). See *biotite and muscovite*.

MICACEOUS IRON.—Grampians, in veins of metamorphic rocks; Lake Tyers; other places in Gippsland (M. 1866). Northern parts of the colony (B.S. 1872). Boggy Creek (P.R. Vol. 7). Dunolly; Snowy River; Loddon River; Flemington (P. 1873). Dargo River; Nowa Nowa; Fernbank (M.R. 1889). Omeo; Dookie; Mitchell River (M.H.). Bairnsdale; Beechworth; Snowy Creek; Twofold Bay (P.R. Vol. 3). See *hematite* and *specular iron*.

MICROCLINE.—Dargo, specks in aplite (H. in Trs. R.S. Vic., 1887, p. 136).

MIDDLETONITE.—See *mineral resin*.

MIMETESITE.—St. Arnaud, in the silver reefs (M. 1866). In the mineral veins throughout the colony (B.S. 1866). Corner Inlet (M.H.).

MINERAL CHARCOAL.—South Clunes (P. 1879-80). Durham Lead, Ballarat, at the junction of a basaltic lava and overlying the gold-drift (T.M.).

**MINERAL RESIN.**—Two kinds occur in the Lal Lal lignite deposits, one resembling middletonite, and the other resembling retinite from the Bovey coal. Another occurs at Cape Patterson (M. 1866).

**MIRABILITE.**—Efflorescences on the walls of Prospector's Tunnel at Mitchell's diggings, Campaspe River (N.M.). (Geo. Sur.  $\frac{1}{4}$  Sheet 13 S.E.). Stawell (P.R. Vol. 3).

**MISPICKEL.**—Generally distributed (Sel. 1861). Except pyrites, the most frequent ore in auriferous reefs; occurs in veins, patches, or impregnated; crystals in the slate and sandstone walls; Whip Reef, Bendigo; Lisle's and Manton's Reefs, Tarrengower; Wilson's Reef, St. Arnaud; Nimrod and Wattle Gully Reefs, Castlemaine, etc. (M. 1866). Barfold Ranges, with scorodite in quartz (N.M.). St. Arnaud; Glen Dhu (P. 1868). Maldon; Blackwood; Omeo; Donnelly's Creek; Bright; Landsborough (P. 1870). Enoch's Point (P. 1873). Stockyard Creek (P. 1876). Bethanga (P. 1878). Band and Albion Mine, Ballarat (P. 1880). Beechworth (P. 1882-3). Ajax Mine, Castlemaine (P. 1885). Chiltern, in granite (P. 1889). Swift's Creek, in a dyke (M.S. 1884). Grant, argentiferous; Upper Mitchell River; Ballarat; Granya (M.S. 1886). Walhalla; Doon (M.R. 1889). Alexandra (M.R. 1890). Upper Yarra (T.M.). Boggy Creek; Deptford; Baldhill Creek; Dargo; Wombat Creek; Haunted Stream (Cl.). Nearly all auriferous reefs below the water line; Amherst; Ararat; Blue Mountain; Bonang; Buchan; Cathcart; Egerton; Lauriston; Majorca; Maryborough; Steiglitz; Stawell; Woods Point (P.R. Vol. 3). Bethanga (M.R. 1896). See note after *iron ores*.

**MOLYBDENITE.**—Yackandandah and Reedy Creek, fine hexagonal plates in quartz veins traversing granite; the Breweries, near Maldon (M. 1866). Latrobe River (B.S. 1872). Yea, in granite; Bradford Lead, Maldon, in rock crystal and cairngorm; Nuggetty Reef, Maldon; Mount Moliagul (M. 1870). Wattle Gully Reef, Castlemaine, in quartz (P. 1876). Near Berlin, in quartz (P. 1878). Bulgoback, Gippsland (P. 1879-80).

Harcourt, in granite (P. 1882-3). Beechworth; Lee's Creek (M.R. 1889). Ballarat; Buffalo River (T.M.). Myrtleford (M.H.). Barwidgee; Mount Buffalo; Little River (P.R. Vol. 3). Cape Woolamai, in granite; Victoria Valley, veins in syenite (Pd.). *Molybdenum* (Molybdenite? J.A.A.), from Wattle Gully, plates several inches in width, also tabular crystals in elvanite, etc. (P. 1876).

MOLYBDIC OCHRE.—Yea, in hollows of molybenite; Mount Moliagul, coating joints of quartz (M. 1870). See note in the same volume.

MONAZITE.—Bethanga (P. 1881). Strathbogie Ranges? (P. 1880).

MOONSTONE.—See *Adularia*.

MOUNTAIN LEATHER.—Kangaroo Hill and Table Hill, near Tarilta, thin, paper-like laminae in the joints of white silurian mud-slate at the bottom of gold-drifts (M. 1866). Maldon, at the 690ft. level (T.M.). South German Reef, Maldon, at the 900ft. level, with calcite in quartz (T.S.H.).

MUELLERITE.—Skipton Caves ("Chem. News," 13th May, 1887). Mr. Macivor, in this journal, says this is a mineral new to science, and he promises to describe it in a future paper.

MUSCOVITE.—One of the principal constituents of our granites and grey felspar porphyries; Beechworth, light green crystals in sandstone; near Harrow; near Anakies, in granite hills; Reid's Creek, etc (M. 1866). Daylesford (B.S. 1872). Mount Wills, in dykes; North Gippsland, in granite (Cl.). Hill's Corner, Baynton, in granite, along its junction with the lower silurian (N.M.). Maldon, with garnets and orthoclase, at a depth of 1120 feet (P. 1882-3). Station Peak; Grampians; Beechworth; Inglewood; Yackandandah; Coliban River (T.M.). Glenelg (P.R. Vol. 3). Near Heathcote, in sandstone (H. 1896).

NACRITE.—A specimen from Maldon is shown in the Technological Museum.

- NATROLITE.**—Phillip Island, in basalt (M. 1866). Flinders (T.M.). Chetwynd, in older basalt (T.M. Catalogue, 1894).
- NEPHELINE.**—Phillip Island, in older basalt (P. 1877-8). (Record apparently altered to *Apatite* without comment. See T.M. Catalogue, 1894, p. 43).
- NICKEL.**—Western Port district, in native iron (B.S. 1861). Thompson River Copper Mine, sparingly (P.R. Vol. 6).
- NEWBERYITE.**—Near Warrnambool, in guano deposits; Skipton Caves, in guano deposits ("Chem. News," 13th May, 1887). For analysis see the same journal.
- NONTRONITE.**—(variety of chloropal). Maldon, small seams and patches in reefs (M. 1866). New Chum Reef, Bendigo (P. 1874). Mount Steiglitz (T.M.). Granya (P. 1882-3).
- OBSIDIAN.**—The following have been recorded as occurrences of obsidian (see note below). In pieces on basaltic plains round Mount Elephant and Mount Eeles (? Mount Eccles, J.A.A.); also, strange enough, over the tertiary mud plains of the Wimmera, far removed from any basaltic craters or points of eruption; near Geelong, in basaltic quarry; Broadford, in basalt; Spring Creek, near Daylesford, pieces in tertiary drift (M. 1866). Ballarat, from western deep leads (P. 1874). Buttons from the lava floors of Western District; Geelong and Ballarat, buttons and hollows bombs (T.M. Catalogue, 1824). Barwon River (T.M.). Ararat; Ingleby (P.R. Vol. 3). For analyses see Catalogue N.M. 1868). *Note*—Mr. A. W. Howitt, F.G.S., tells me that he has analysed a number of specimens of the so-called obsidians, and has found them in every case to be basic, and that we have no obsidian as we now know it; but that our volcanic glass is really tachylite. Mr. Rule, late of the Technological Museum, expressed the same opinion to me on another occasion.
- ODONTOLITE** (Bone turquoise).—Bairnsdale, a fossil tooth of a kangaroo (T.M.).
- OLIGOCLASE.**—Mount Franklin and the Anakies, in scoriaceous basalt; Lake Purrumbete; Black Hill, near Kyneton, in granite; Tarrengower, in granite; Harcourt, in granite (M. 1866). Kyneton (Sel. 1861). Anakies,

with olivine and hornblende (N.M.). For analysis see N.M. Garden Gully Reef, Bendigo, in a basalt dyke (P. 1876). Phillip Island, in older basalt (P. 1877-8). Tangil (P. 1881). Mount Elephant; Mount Shadwell; Learmonth; etc. (T.M. Catalogue, 1894). Mount Lookout, Gippsland (T.M.). Dargo, in aplite (H. in Trs. R. S. Vic., 1887, p. 137).

**OLIVINE.**—Common in the newer basalts, except where they occur as true dolerite; irregular shaped masses near craters and points of eruption, as at Mount Franklin; Anakies; Gisborne Hill; Warrion Hills; etc. (M. 1866). Garden Gully Reef, Bendigo, in a dyke (P. 1876). Basin Bank Lakes, massive (P. 1875-6). Camperdown, bombs (P. 1877-8). Mount Gambier; Mount Leura; Learmonth (P. 1878). Tangil (P. 1881). Sunbury (P. 1885). Daylesford (P. 1887). Mount Shadwell (P. 1884). Mitchell River (Cl.) Snowy Bluff (H. teste Cl.). Western Port, in older basalt; Mount Lookout, Gippsland (T.M.). Cape Schanck; Coal Creek; Coimadai Creek; Dargo High Plain; Kilmore; Melton; Waterhouse Island, in Bass Strait (P.R. Vol. 3). Dargo, in igneous dyke (H. in Trs. R.S. Viet., 1877).

**OLIVENITE.**—Wilson's Reef, St. Arnaud, reniform coatings in hollows (M. 1866).

**ONYX.**—Reported from Beechworth and Yarra basin, very scarce (M. 1866).

**OPAL.**—*Common opal.* Sunbury, in basalt; Gelantipy, large deposit, mostly yellowish or dark brown (Cl.). Phillip Island; Moe (P. 1880). Near Morwell (P. 1882-3). Woodend (M.S. 1886). Buchan (P. 1888). King River, with chalcedony; Moolort; Gisborne; Kyneton; Talbot; Blackwood; near Bairnsdale; Joyce's Creek (T.M.). *Precious opal.* Beechworth, rare (M. 1866). Gelantipy; Sassafra Creek; Woori Yaloak (P.R. Vol. 3). *Fire opal.* Ovens (Bl. in Trs. R.S. Vic., 1866). Beechworth (Bl. 1866). Head of Woori Yaloak River (B.S. 1872). *Pitch opal.* Gippsland (T.M.). *Semi-opal.* Maldon (T.M.). Near Melbourne, in basalt; Gisborne; Bacchus Marsh; Riddell's Creek (M. 1866). *Opaline*

*quartz.* Heathcote, in tertiary drift (N.M. Beechworth; Essendon; Keilor; Mount Duneed; Shady Creek (P.R. Vol. 3).

OPALIZED WOOD.—See *Silicified wood.*

OPAL JASPER.—See *Jasper.*

ORIENTAL EMERALD (Green sapphire).—Pakenham (M. 1870). Near Cooma (Bl. in Trs. R.S. Vic., 1866). Jim Crow Ranges; Donnelly's Creek; Ovens River; near Daylesford (Bl. 1866). (Dr. Bleasdale called this "the rarest of all gems"). Beechworth; Dry Creek; Stockyard Creek; Upper Yarra (P.R. Vol. 3). A green star sapphire from Ovens (Bl. in Trs. R.S. Vic., 1865-6).

ORIENTAL TOPAZ (var. sapphire).—Pakenham (M. 1870). Ovens (Bl. in Trs. R.S. Vic., 1865-6).

ORPIMENT.—Deptford; Mount Baldhead, Gippsland, in cavities of pyritic quartz (Cl.). *Sulphide of arsenic* at Stawell (P.R. Vol. 3).

ORTHOCLASE.—The principal component in all our granites; veins in the neighbourhood of the granite and silurian boundaries at Maldon; Elphinstone; Harcourt; etc.; in detritus at Timbillica Valley, Gippsland; and near Kangaroo Flat, Talbot; Bradford, pink crystals; Reid's Creek, Beechworth (M. 1866). Mount Barker and Expedition Pass, Castlemaine, large crystals (T.S.H.). Mount Taylor and the same series of rocks throughout North Gippsland (Cl.). Kyneton; Amherst (Sel. 1861). Back Creek, Baynton (N.M. 1868). Cape Woolamai, with albite (P. 1878). Beechworth (P. 1879-80). Maldon, with garnets and muscovite (P. 1882-3). Lal Lal; Phillip Island (T.M.). Dargo, in aplite (H. in Trs. R.S. Vic., 1887, p. 137).

OSMIRIDIUM.—Stockyard Creek, a few grains (P. 1873). Turton's Creek, South Gippsland, small quantities in the alluvial workings (P. 1880-1). Waratah Bay (T.M.).

PALAGONITE TUFFA.—Collingwood (P. 1889).

PHACOLITE.—Richmond basalt quarries (P. 1876). South Clunes (P. 1879-80). Collingwood, in basalt (P. 1880). Brunswick quarries (P.R. Vol. 6).

- PHARMACOSIDERITE.—Castlemaine (Sel. 1861). Port Phillip Company's Mine, Clunes, small crystals; Beehive Reef and German Reef, Maldon; Armenian Reef, St. Arnaud; Maryborough; Bendigo; Crooked River (M. 1866). Boggy Creek, near Mount Taylor, cubic green crystals, in crevices of greenish-stained quartz (Cl.). *Arseniate of iron* from Gippsland (B.S. 1872). St. Arnaud (B.S. 1866). Beechworth (P.R. Vol. 3).
- PHILLIPSITE.—Richmond, in basalt (N.M. 1868). Kyneton, in basalt (M. 1870). Malmsbury, in basalt (P. 1878). Collingwood, in basalt (P. 1880), Phillip Island, rare (T.M.). Brunswick quarries (P.R. Vol. 6). For analysis see M. 1870.
- PHOLERITE.—Blacksmith's Gully, Fryerstown, in kaolin (N.M. 1868). Albion Company's Reef, Steiglitz, with bournonite, tetrahedrite, gold, etc. (M. 1870). Eaglehawk Reef, Maldon (P. 1877-8). Bendigo (P. 1885). Raspberry Creek, in decomposed diorite dyke (T.M.). Ajax Reef and Garfield Reef, Castlemaine (T.S.H.) Snowy Creek (P.R. Vol. 4).
- PHOSPHATE OF AMMONIA.—Skipton Caves, in guano deposit ("Chem. News," 13th May, 1887).
- PHOSPHATE OF IRON.—See *Vivianite*.
- PHOSPHATE OF MAGNESIUM.—Skipton Caves, in guano deposit ("Chem. News," 14th May, 1887).
- PHOSPHORITE.—Bruthen Creek, Gippsland, in decomposed basalt (M. 1870). For analysis see the same work.
- PHOSPHORUS.—In brown iron ore at Blackwood; Strath Creek; Ghost Creek (P. 1878).
- PINITE.—Maldon (P. 1882-3). Beechworth, in granite (L. 1873, p. 199).
- PLAGIOCLASE.—Omeo, in granite; near Heathcote, in granite and sandstone (H. 1896).
- PLAGIONITE.—Buchan (P. 1871).
- PLATINUM.—Stockyard Creek, Gippsland, in alluvial workings (P. 1874).
- PLEONASTE.—Upper Yarra, in gold-drift, with sapphire, zircon, etc.; Blue Mountain; Ballan (M. 1866). Yarra Basin, with stream tin (B.S. 1866). Colac (P. 1871). Bass

River, Western Port, in sand (P. 1883). Haskett ; Woodend (M.S. 1886). Eaglehawk (M.S. 1887). Daylesford ; Glenlyon (P. 1889). Granya (M.R. 1889). Benalla ; Bullarook (T.M.). Corindhap ; Jindivik (P.R. Vol. 7). Ballarat ; Beechworth ; Mansfield (P.R. Vol. 3).

PLUMBAGO.—See *graphite*.

PRAISE.—Rather rare. Specimen Gully Reef, Castlemaine ; Heathcote, in some of the reefs (M. 1866). Lady Gully Reef, Castlemaine (Sel. 1861). Blacksmith's Gully Reef and Ajax Reef, Castlemaine (T.S.H.). Maldon (T.M.). Blackwood ; Clunes ; Bendigo ; Stawell (P.R. Vol. 3).

PREHNITE.—Snowy Bluff, Gippsland (H. teste Cl.).

PROCHLORITE (chlorite peach).—Grampians ; Ballarat ; German Reef, Maldon (T.M.). Heathcote, in diabase rocks (H. 1896).

PSILOMELANE.—In the quartz reefs of all the gold fields, as manmillary crusts, concretions, cementing material, coatings over gold, quartz, pyrites, etc. (M. 1866). Upper Yarra, in quartz (B.S. 1872). Mount Taylor district ; Bruthen ; Boggy Creek ; Omeo ; Gelantipy (Cl.). Molesworth ; Walhalla ; Jan Juc (P.R. Vol. 7). Seymour (P. 1873). Near Kilmore (P. 1885). Jameson River ; Mount Buller ; near Avoca, with brown tourmaline (P. 1877-8). Near Seaton, Gippsland (P. 1879-80). Molesworth, with cobalt and copper (P. 1880-1). Gippsland ; Dunolly (T.M.). Bendigo (P.R. Vol. 3). Riversdale (P.R. Vol. 4). Tangil (P.R. Vol. 6).

PYRITES.—The most common ore in auriferous quartz reefs. Occurs in narrow veins or impregnated. Crystals and druses frequent. Always more or less auriferous. Ovens district ; Mount Blackwood ; Crooked River ; Tarren-gower ; St. Arnaud ; Landsborough ; perfect crystals at Wattle Gully, Castlemaine ; Malmsbury ; Maryborough ; Tarilta, etc. ; crystals at Muckleford ; Woods Point, etc. (M. 1866). Many localities in the Castlemaine district, as Wattle Gully, cubes in sandstone ; South



Wattle Gully Mine, octahedra; Devonshire Mine, pentagonal dodecahedra (T.S.H.). Haunted Stream; Omeo; Dargo; Nicholson River, one-inch cubes; nearly all the gold-bearing reefs of East Gippsland; Mount Lookout, in lignite; Clifton Morass, pseudomorph after wood (Cl.). Bendigo; Howqua River; Lancefield; Moyston (N.M. 1868). Woodside, Gippsland (P.R. Vol. 7). Maldon (P. 1884). Pleasant Creek, secondary (P. 1876). Bethanga, mixed with mispickel and copper pyrites (P. 1877-8). Moe, secondary (P. 1880). Daylesford; Clunes (P. 1879-80). Jan Juc, secondary (M.S. 1884). Golden Point Lead, Ballarat, wood converted into pyrite; Fryerstown (T.M.). Burke's Flat; Dunolly; Alexandra; Ararat; Beechworth; Blakeville; Bright; Buchan; Crossover Creek; Deptford; Diamond Creek; Frankston; Hoddle Range; Gaffney's Creek; Jameson; Majorca; Myrtle Creek; Panton Hill; Redbank; Snowy Creek; Stockyard Creek; Stringer's Creek; Tarnagulla; Woods Point; Yackandandah; Steiglitz; Tangil; Daylesford; Stawell; stalactite at Ballarat (P.R. Vol. 3). Near Heathcote, in diabase rocks (H. 1896). Dandenong Ranges; Queenstown; Mount Useful (M.R.F.).

**PYROLUSITE.**—Near Kilmore (M.R. 1885). Drouin (P. 1881). Upper Yarra (N.M.). Mount Taylor (Cl.). Indented Heads (Sel. 1861). Pleasant Creek district; Ararat (M. 1866). Fifteen miles from Moe, cementing medium in brecciated quartz (Pr. R.S. Vic., 1880, p. 145).

**PYROMORPHITE.**—Small, light-green prisms at Nicholson's Reef, Castlemaine; Chrysolite Reef, St. Arnaud; Avoca; Maryborough; Bendigo (M. 1866). In the mineral veins throughout the colony (B.S. 1866). Fone's Reef, Burke's Flat (P. 1874). Dry Gully, near Mount Livingstone (Trs. R.S.S.A. Vol. 7, 1883-4). *Phosphate of lead* from Dargo High Plain (P. 1872). St. Arnaud, with silver ores (P. 1874). Ararat (P.R. Vol. 3).

**PYROPE** (garnet).—Ovens (Bl. in Trs. R.S. Vic. Vol. 8, 1866).

**PYROPHYLLITE.**—A mineral answering to this in appearance and behaviour before the blow-pipe was found in a eutitic

granite dyke at Beechworth (M. 1870). Maldon, with calcite, dolomite, etc. (M.S. 1875-6).

**PYRRHOTITE.**—Howqua district, in the reefs; Maldon, in several reefs; Specimen Gully Reef, Castlemaine, etc. (M. 1866). Green Gully, near Newstead (P. 1874). Bethanga (P. 1886). Near Stawell (T.M.). Lancefield; Mount Timbertop; Waratah Bay (P.R. Vol. 3).

**QUARTZ** (common vein quartz).—The massive variety, the most common of colonial minerals, is represented by the thousands of reefs that traverse the silurian rocks, and also as extensive beds of quartz rock, sometimes nearly forty feet thick, in the tertiary formations. Druses occur in all the reefs (M. 1866). In veins on all the gold fields in East Gippsland (Cl.). *Granular quartz* at Mount Franklin, in basalt; *stalagmitic* at Back Creek, near Baynton, in a cave in granite; *mammillated quartz* at Phillip Island (N.M.). *Cavernous quartz* from Gippsland (P. 1883). *Quartz enclosed in basalt* from Anakies; Phillip Island; Mount Franklin (T.M.). *Iridescent quartz* at Mount Taylor (Cl.). See limonite for other occurrences of this iridescent film.

**QUARTZ CRYSTALS.**—See *Rock crystal*.

**QUICKSILVER.**—See *Mercury*.

**RANDANITE.**—See *Infusorial earth*.

**REALGAR.**—Deptford and Mount Baldhead, in quartz cavities (Cl.) *Sulphide of arsenic* occurs at Stawell (P.R. Vol. 3).

**RED OCHRE.**—Generally distributed in tertiary rocks (Sel. 1861). Frequent in the tertiary rocks round the coast (M. 1866). All parts of the colony; extensive deposits in connection with the older basalt of Phillip Island; also at Ballan; Blackwood; Daylesford; Bacchus Marsh; Tarwin River; Anderson's Inlet (P. 1876). White Hills, Bendigo (P. 1877-8). Boggy Creek; Wombat Creek; Omeo (Cl.). Near Bendigo (M.S. 1875-6). See also *hematite*.

**REDRUTHITE.**—See *chalcocite*.

**RETINITE.**—Bruthen Creek, Gippsland (P. 1880-1). Woodside, Gippsland (P.R. Vol. 7). Near Cape Bridgewater (P.R. Vol. 3). See also *mineral resin* and *copaline*.

- RHODOCHROSITE.—Port Phillip Mine, Clunes (T.M.).
- RIEBECKITE.—Near Heathcote, in diabase rocks (H. 1896).
- RIPIDOLITE.—Near Heathcote, in diabase rocks (H. 1896). See *prochlorite*.
- ROCK CRYSTAL.—On all the gold fields (Sel. 1861). Druses of crystals occur in nearly all the reefs (N.M.). For figures of crystals see M. 1870.
- ROCK-MILK.—Collingwood, in basalt (T.M.). See also *calcite*.
- ROSE-QUARTZ.—See note to *amethyst*.
- RUBELLANE.—Footscray and Vaughan, in decomposed basalt, small brownish-red tables (M. 1866).
- RUBELLITE.—Bradford Lead, Tarrengower, in quartz crystals (P. 1868).
- RUBY (oriental).—Mount Eliza, very rare (M. 1866). Pakenham (M. 1870). Sebastopol, near Beechworth; Studley Park, Melbourne; several localities where sapphire is found (P. 1870). Stockyard Creek, Gippsland (P. 1878). Rubies are also recorded from Traralgon Creek (P. 1877-8). Berwick; Daylesford; Mount Martha (P.R. Vol. 3).
- RUTILE.—Blue Mountain and Upper Yarra, in the wash-dirt (M. 1866). Bass River; Omeo; head of Mitta Mitta River (T.M.). Gippsland; Epsom Flat; Bendigo, in quartz crystal (P. 1874). Near Pakenham (P. 1878). Benak (P. 1880-1). Broadford (M.R. 1889). Maldon, in granite (T.M. Catalogue 1894). Beechworth; Daylesford; Stockyard Creek (P.R. Vol. 3). Kingower (P.R. Vol. 5). Dry Gully, near Livingstone (Stirling in Trs. R.S.S.A., 1883-4).
- SALT (common). Saline lakes in the Western district, crusts up to two inches thick (M. 1866). Lake Cundare (M.R. 1890). Stawell; Lakes St. Mary; Parupa; Williamschase: lakes in the Avoca district (P.R. Vol. 3).
- SANIDINE.—Coleraine, in volcanic rock (J. Dennant in Report of Australasian Association for the Advancement of Science, 1893).
- SAPPHIRE.—Castlemaine, etc. (B.S. 1861). In the gold-drifts of Beechworth; Daylesford; Vaughan; Blue Mountain; Upper Yarra; Mount Eliza; Inglewood, etc. (M. 1866). Tubba-Rubba Creek, Mornington; Trentham;

Yarra Ranges (B.S. 1866). Dandenong Creek (Bl. 1866). Ovens, *white, yellow, blue, and green* varieties; Fryer's Creek; Gippsland (Trs. R.S. Vic., 1866). Near Redesdale; near Cape Otway (N.M.). Pakenham; Mount Greenock Lead (M. 1870). Blackwood; Mansfield; Dry Creek; Ballarat (P. 1870). Axedale; Campaspe River; Dry Diggings; Colac (P. 1871). Head of Woori Yaloak River; basin of Little Yarra River; Dandenong Ranges (B.S. 1872). Fryerstown, in drift (P. 1878). Garlic's Lead (P.R. Vol. 7). Glenlyon (P. 1889). Gembrook (M.R. 1890). Bairnsdale; Upper Boggy Creek, Gippsland (Cl.). Stockyard Creek; Benalla; Yarragon; Bass River; Benambra (T.M.). Alexandra; Berwick; Bunyip River; Buninyong; Crossover Creek; Franklin River; Jim Crow diggings; Latrobe River; Lintons; Sassafras Creek; Steiglitz; Tarwin River (P.R. Vol. 3). See also *Adamantine Spar, oriental emerald, oriental topaz*.

SARDONYX.—Beechworth and Yarra basin, very rare (M. 1866).

SHEELITE.—Nuggety Reef, Maldon (M. 1870). Maldon, in considerable quantities, with calcite (M.S. 1875-6).

SCHORL.—See *tourmaline*.

SCOLECITE.—Preston Vale, on decomposed granite; Yackandandah, on a dense greenstone (M. 1870).

SCORODITE.—Crooked River, crystals; Blucher's Reef, Maryborough; Beehive Reef, Maldon (M. 1866). Poverty Reef, Dunolly, green crystals in quartz (N.M.) Wentworth River (P.R. Vol. 7. Bethanga (P. 1879-80). Strathbogie Ranges (P. 1880). Monument Creek (M.S. 1885). Doon (M.R. 1889). Broadford (T.M.). *Arseniate of iron* from Gippsland (B.S. 1872). St. Arnaud (B.S. 1866). Beechworth (P.R. Vol. 3).

SEEBACHITE.—See *phacolite*.

SELENITE.—See *gypsum*.

SELWYNITE.—Near Heathcote, a vein in upper silurian rocks, traversed by thin seams of talc and accompanied by two other undetermined minerals (N.M.). For analysis see N.M. and M. 1870. A mineral closely allied was recorded from Benalla (M.R. 1889).

- SENARMONTITE.—Costerfield (P. 1876). See note under *valentinite*.
- SERICITE.—Near Heathcote, flakes in silurian and metamorphic rocks (H. 1896).
- SERPENTINE.—Mount Timbertop (M. 1870). Analysis in the same work. Mirboo (M.S. 1884). Gippsland; Wannon Falls (P.R. Vol. 7). Beechworth; Mount Wellington; Waratah Bay, produced by the decomposition of gabbro (T.M. Catalogue 1894) Benalla (P.R. Vol. 3). Mount Bulla; Howqua River (P.R. Vol. 4). Dargo, pseudo-morphs after olivene (H. in Trs. R.S. Vic., 1887).
- SIDERITE.—See *Chalybite*.
- SILICATE OF IRON.—Maldon; Snowy River (P.R. Vol. 3).
- SILICIFIED WOOD.—Barrabool Hills; banks of the Barwon River, near Geelong; Sutherland's Creek, near Maude; Bacchus Marsh district; several places in Gippsland (M. 1866). Bulla Bulla Creek (M.R.F.). Large blocks in some of the tertiary formations; parish of Durdidwarrah, in hard silicious rock underlying older basalt and tertiary beds; Glenmaggie, in pebble drift (N.M.). Swift's Creek (P. 1878). Near Morwell; Sloan's Punt, on the Goulburn River (P. 1882-3). Western Port (P. 1884). Macalister River (P. 1891). Glenelg River; Coleraine (T.M.). As *wood opal* it is recorded from Bass River; Grampians; the gold-drifts of Daylesford; Ballarat, etc. (M. 1866). Between Moe and Morwell (P. 1883). As *fossil wood*, from Footscray; Lal Lal (P. 1880). Laanecoorie (M.R. 1889). Waratah Bay; Stawell (P.R. Vol. 3). Hepburn; Omeo (M.R.F.).
- SILVER (native).—St. Arnaud, in the silver reefs (M. 1866). Landsborough, in thin veins of quartz, with gold, copper and lead; Stawell (P. 1871). Dry Gully, near Mount Livingstone (Stirling in Trs. R.S.S.A., 1883-4). *Silver* is recorded from Howqua Hills, in quartz; junction of Delatite and Goulburn Rivers, in quartz; Tangil, in earthy siderite (P.R. Vol. 7). Omeo (Cl.). *Silver ores* from Pleasant Creek (B.S. 1866). Woods Point; Landsborough (P. 1869). Ringwood, in quartz, one sample (B.S. 1872). Bairnsdale; Mount Wills; Glen Wills; Gelantipy; Mansfield; Bemm River (M.R. 1896). See under the names of the different silver ores.

SMOKY QUARTZ.—See *cairnngorm*.

SPECULAR IRON.—Sandy Creek, Tarrengower, tabular crystals, sparingly; Malmsbury, in dolerite and dolerite porphyry (M. 1866). Grampian Mounts (N.M.). Bonang, with magnetic iron (P. 1876). Bairnsdale (M.R. 1889). Dookie; Mia Mia; Riversdale; Snowy Creek; Yarra River (M.H.). Footscray; Redesdale (P.R. Vol. 3). Moyston (P.R. Vol. 4). *Iron glance* from Western Port (P.R. Vol. 7). Beechworth (M.S. 1886). Mount Korong, in granite (N.M.). County Millewa (P. 1884). Lake Tyers (M.R.F.). See also *hematite*, *red ochre*, *micaceous iron*.

SPHÆROSIDERITE.—In the basalt of many localities, as Loddon outliers; Sunbury; Campaspe Falls; Ballan, etc. Nodular masses in the mesozoic coal measures near Geelong (M. 1866). Essendon (N.M.). *Carbonate of iron* occurs at Steep-bank Creek, Wannon district; Italians' diggings, Barfold, junction of basalt and sandstone (N.M.). Malmsbury, in basalt (P. 1871). Sarsfield; Pleasant Creek (T.M.). *Clay iron ore* at Avoca (P. 1874). See also *chalybite*.

SPHALERITE.—Specimen Gully, Castlemaine (Sel. 1861). In the auriferous reefs of perhaps all our gold fields, but more frequently in Russell's Reef, near Malmsbury; Nuggety Reef, Maldon; Wilson's Reef, St. Arnaud; Morse's Creek; Ovens district, etc. (M. 1866). Francis Ormond Reef; Crown Nimrod Reef; Mopoke Gully; Scotchman's Gully, all near Castlemaine (T.S.H.). St. Arnaud, in the silver mines (N.M.). Buchan, in lead mine; Back Creek; Swift's Creek; many reefs at Bendigo; Steiglitz; Inglewood; Rushworth (P. 1873). Victoria Reef, Maldon (P. 1874). Foster (P. 1876). Bethanga (M.S. 1884). Stuart Mill, from core of diamond drill; Ballarat; Percydale (M.S. 1886). Maldon (T.M.). Wombat Creek (M.R. 1890). Boggy Creek; Buchan; Haunted Stream; Omeo (Cl.). Murrindall; Wangarratta (T.M.). Anherst; Blackwood; Clunes; Daylesford; Gordons; Llanelly; Stawell (P.R. Vol. 3).

SPHENE.—Near Heathcote, in diabase rocks (H. 1896).

- SPINEL RUBY (Balas ruby).—In the auriferous drifts of the colony (B.S. 1866). Beechworth (Bl. 1866).
- STANNITE.—Australian Alps, near Pilot Creek, in a quartz matrix (Stirling in Trs. R.S.S.A., 1883-4).
- STEATITE.—Strathloddon, in silurian rocks (M. 1866). Dunolly (P.R. Vol. 3). *Pseudo-steatite* from Alexandra; Lauriston; Woods Point (P.R. Vol. 3). See also allophane and tale.
- STEINMANITE (var. galena).—Murriindall (Pr. R.S. Vic., 1880, p. 145).
- STIBLITE (antimony ochre).—Heathcote; Templestowe; Maryborough; Upper Yarra (Sel. 1861).
- STIBNITE.—Costerfield, massive; Reedy Creek; Whroo; Maldon; Templestowe; Woods Point; several reefs at Ballarat; Daylesford; Maryborough; Blackwood; Caledonian diggings; Anderson's Creek (M. 1866). Sunday Creek, near Kilmore; Tooborac (B.S. 1866). Jameson (P.R. Vol. 7). Munster Gully, Dunolly; Upper Yarra (M. 1870). Bacchus Marsh (P. 1873). Bendoc; Dargo; Swamp Creek; Buchan (Cl.). Mount Bullen, near Mansfield (P. 1883). Gippsland; Ararat (P. 1870). Alexandra; Port Albert; Yea; Northcote (P. 1868). Box Hill; Nunawading; Wapautaki Creek, near McIvor; Bendigo; Murchison (P. 1874). Broadford; Queenstown; Redcastle; McIvor (T.M.). Big River, fifteen miles from Enoch's Point (M.R. 1887). Morwell; Merton; Delatite district; Wombat Creek (M.R. 1889). Heathcote; Rutherglen (B.S. 1866). Bulla; Coy's diggings; Clunes; Donovan's Creek; Doogalook; Mount Useful; Snowball Hill; Sunbury (P.R. Vol. 3). Steiglitz; Bethanga; Warrandyte; Tallarook (M.H.). Near Chiltern (M.R.F.). For analysis see B.S. 1866.
- STILBITE.—Barrabool Hills (P. 1880). Harcourt, druses in granite (T.S.H.).
- STRONTIA.—See note to *barite* from Maldon.
- STRUVITE.—Skipton Caves, in guano deposit, light yellow, sub-transparent, crystalline particles, and perfect crystals (M. 1870). For analyses see M. 1870, and "Chem. News," 13th May, 1887.

- SULPHUR (native).—Costerfield antimony reef, in crevices; Fentiman's Reef, Maldon; St. Arnaud; Specimen Gully Reef, Castlemaine (M. 1866). Woods Point (P. 1876). Clifton Morass, East Gippsland; Sarsfield, where mounds six feet high have been thrown up and free sulphur deposited in the crater-like basin (Cl.). Mallee (P.R. Vol. 7). Dandenong (P. 1878). Bendigo; Beechworth (P.R. Vol. 3).
- TACHYLITE.—Near Geelong, in basalt (P. 1877-8). Collingwood (P. 1880), Richmond, in basalt; Phillip Island, in basalt (T.M. Catalogue 1894). Saltwater River; Talbot (T.M.). All the records of the occurrence of obsidian should probably be under tachylite. See note after *obsidian*.
- TALC.—Near Heathcote, thin veins in selwynite (M. 1866). Beechworth (P.R. Vol. 3).
- TALCOSITE.—Near Heathcote, in the selwynite (M. 1870). For analysis and description see M. 1870.
- TELLURIC IRON (?)—Magnet Hill, near Baynton's, minute particles and small octahedra in basalt (P. 1873).
- TETRAHEDRITE.—Albion Company's Mine, Steiglitz (M. 1870). Jameson (T.M.). Maryborough (P.R. Vol. 6). For description see M. 1870.
- THOMSONITE (comptonite).—Near Frankston, on granite (P. 1877-8). Heathcote, in diabase rocks (H. 1896).
- TIN (METALLIC).—Malmsbury, associated with tin-sand (P. 1882-3). Latrobe River (M.R.F.).
- TIN-SAND.—See *cassiterite*.
- TITANIFEROUS IRON SAND.—Abundant in the gold-drifts of perhaps all the gold fields; in the drainage channels from, and in the detritus of, basalt escarpments. As far as can be made out, it consists of two species, iserine and menaccanite (M. 1866). Samples have been received by the Mines Department from all parts of the colony. It usually contains garnets, sapphires, zircons, topazes, and, in some cases, cassiterite (M.S. 1875-6).
- TOPAZ.—Ararat; Castlemaine; near Pleasant Creek (B.S. 1861). French Island and Flinders Island, crystals and rolled pebbles in tolerable abundance; Dunolly, blue and



white, in gold-drift; Woolshed; Sebastopol; Eldorado; Reid's Creek; Beechworth; Bendigo (M. 1866). Moonambel; Mountain Creek; Gippsland (Bl. 1866). Dr. Bleasdale says—"Wherever the blue topaz is found, there also the diamond may be looked for." Redesdale (N.M.). Mount Greenock, near Talbot (M. 1870). For an account of an interesting occurrence at Bradford Lead, Maldon, see M. 1870. Blackwood; Dry Creek; near Mansfield; Ballarat (P. 1870). Near Lilydale; Dandenong Ranges (B.S. 1872). Near Pakenham, in drift (P. 1878). Strathbogie Ranges (P. 1880). Gembrook (M.R. 1890). Crooked River (Cl.). Colac; Yackandandah; Myrtleford Creek (P. 1871). Coburg; Daylesford; Franklin River; Majorca; Sassafras Creek; Stawell; Upper Yarra; Stockyard Creek (P.R. Vol. 3). *Smoky topaz* at Beechworth; Maldon; Upper Yarra (P.R. Vol. 3).

**TORBANITE.**—Tyer's Creek, near Traralgon (P. 1874). For analysis see P. 1874.

**TOUCHSTONE.**—See *basanite*.

**TOURMALINE.**—Maldon; Beechworth; Dandenong; St. Arnaud; Mount Alexander, etc.; a common accessory of granite. Abundant in some of the gold-drifts. Dandenong Ranges; Baynton's, in a granite vein; Ovens district; Wilson's Promontory; Berwick; etc.; crystals of transparent green tourmaline at Beechworth and bed of the Yarra River (M. 1866). Yarra Basin, with stream tin (B.S. 1866). Maryville Company, Dalhousie, in quartz; Specimen Gully, Barker's Creek (N.M.). Chiltern; Bright (P.R. Vol. 7). Myrtleford Creek; Yackandandah; Gippsland (P. 1871). Near Pakenham, green (P. 1878). Euroa (P. 1883). Yea, in pebbles (P. 1885). Bethanga (P. 1886). Neerim (M.S. 1884). Molesworth; near Franklin River (M.S. 1887). Gembrook; Agnes River (M.R. 1890). Expedition Pass, Castlemaine (T.S.H.). Omeo; Beenak; Upper Murray; Seymour (T.M.). Bruthen; Bemm River; Mount Wills (Cl.). Stawell (P.R. Vol. 6). Alexandra; Barnawartha; Belvoir; Campaspe; Fanwick; Linton's;

Majorca; Mount Koorong; Mount Singapore; Bendigo; Snowy River; Mount Tarrengower; Lilydale (P.R. Vol. 3).

TRAVERTINE.—Limestone Creek, near Castlemaine; (T.S.H.).

TREMOLITE.—Maldon, with calcite, dolomite, etc. (M.S. 1875-6).

TRIPOLITE.—See *infusorial earth*.

TUNGSTITE.—Maldon (Pr. Rs. Vic. 1880, P. 145).

TURQUOISE.—King River, Omeo (P. 1890).

URALITE.—Waratah Bay, in gabbro (T.M.). Near Heathcote, in diabase (H. 1896).

VALENTINITE.—Costerfield; Morning Star Reef, Woods Point, sparingly (M. 1866). Munster Gully, Dunolly, 62½ to 64 per cent. of antimony (P. 1874). Ringwood (P. 1878). Cashel (T.M.). Dargo; Heathcote; Whroo (M.H.). Upper Bendoc; Blackwood; Caledonia; Coy's diggings; Warrandyte; Yea (P.R. Vol. 3). *Antimony oxides*, without stating which kind, at Box Hill; Bendigo (P. 1874). Gippsland (P. 1870). Blackwood; Upper Yarra (P. 1872). Near Yea; Warrandyte; Upper Bendoc (P. 1873). Yangardook (P. 1876). Merton (M.R. 1889). Big River (M.R. 1890). Ringwood, a mineral which looks like hydrous brown oxide of iron, but has up to 45 per cent. of antimony oxide (P. 1872). *Antimony ores*, without stating which ore, at Anderson's Creek; Steiglitz; near Maryborough (B.S. 1861). Buchan (P. 1871). Thomastown, near Merri Creek (P. 1877-8). Sunday Creek, near Kilmore (P. 1883). Coy's diggings (P. 1884). Kanambra (M.R. 1896).

VIVIANITE.—Nicholson's River, near Bairnsdale, crystals in silurian sandstone; Phillip Island, earthy, in older basalt; Bruthen Creek, in older basalt; Ballarat, in shales and mudstones (N.M.). Ballarat, in basalt; Port Addis; Geelong; Guano islands of Bass Straits; Buckland River (M. 1870). Richmond (P. 1868). Johnson's Creek, Alexandra (P. 1873). Maldon, with calcite and dolomite (M.S. 1875-6). Wannon River, near Hamilton (P. 1884). Princetown (M.R. 1889). Charlotte Plains (P. 1891). Dunolly; Mount Alex-

ander (T.M.). Sarsfield (H. teste Cl.). Port Albert (M.H.). Traralgon (P.R. Vol. 3). Woods Point (M.R.F.). *Phosphate of iron* at Omeo; Snowy Creek; Smythesdale; Tarwin Creek (P.R. Vol. 3).

WAD.—Near Merton, in Goulburn Valley (M. 1866). Boggy Creek; Merrigig Creek, with quartz (Cl.). Clifton Creek, in soft, slaty rock; some of the gold fields (B.S. 1872). Near Walhalla, in joints of a decomposed diorite dyke; Little Dorrit Mine, Crooked River (P. 1880-1). Goulburn River (P. 1882-3). Bethanga (M.R. 1887). Upper Yarra; Hoddle's Creek (M.R. 1890). Beechworth (P. 1889). Rushworth (P. 1890). Near Yea; Molesworth; Warburton (P.R. Vol. 7). Landsborough; Clunes; Dunolly; Strathloddon; Maldon; Caledonian diggings (T.M.). Snowy River; near Black Mountain (P. 1874). See also *asbolite*.

WAVELLITE.—Two miles north of Lancefield, in lower silurian graptolite shales, yellowish or greenish disc-like plates (M. 1870). Beechworth (T.M.).

WITHERITE.—Gippsland; Omeo, with pyrites, lead ores, etc.; Buchan; Corner Inlet (P. 1870).

WOLFRAM.—Near railway cutting at Big Hill; Bendigo line, in quartz; Sandy Creek, Maldon, in quartz; Dandenong; Upper Yarra; Ramshorn Gully, in gold-drifts (M. 1866). Between Sandy Creek and Loddon River, eight miles from Maldon, with schorl, etc. (N.M.). Near Ballarat, in quartz; Nuggetty Reef, Maldon, with scheelite, etc. (M. 1870). Linton's (P.R. Vol 7). North Gippsland (P. 1880). Granya; Swift's Creek; Chiltern (T.M.).

WOLFSBERGITE.—(Antimonial copper). Costerfield antimony reef, scale-like crystals (M. 1866).

WOOD-OPAL.—See *silicified wood*.

YELLOW OCHRE.—See *limonite*.

ZEOLITES.—Gelantipy (Cl.). Ararat; Ballan; Smythesdale (P.R. Vol. 3). Broken River (P.R. Vol. 4). Near Heathcote, in diabase rocks; (H. 1896). See also each zeolite under its own name.

ZINC (Native).—Collingwood, in a cavity in basalt, one specimen only, about 19 ounces in weight; small nodules from

Creswick Creek and Daylesford (M. 1866). Chrysolite Hill, St. Arnaud (P. 1873). Bendigo; St. Arnaud; Maldon; Gippsland (P. 1868). Mitta Mitta River, in auriferous sands (Rutley's Mineralogy, p. 173). Snowy River (P.R. Vol. 3).

ZINC ORE from Wombat Creek (M.R. 1896).

ZIRCON.—Daylesford, crystals; in gold drifts of various localities (Sel. 1861). Generally abundant in the gold-drifts, especially Blue Mountain; Kangaroo; Tarilta; Guildford; Daylesford; Ballan; Upper Yarra; Beechworth. Transparent colourless grains at Hard Hills, Campbell's Creek, near Castlemaine; Yandoit; and Taradale, etc. (M. 1866). Yarra Basin, in stream tin; Tubba-Rubba Creek (B.S. 1866). Gippsland; Jim Crow Ranges (Bl. 1866). Near Lilydale (B.S. 1872). Mount Greenock Lead (M. 1870). Ampitheatre; Jindiciv (P.R. Vol. 7). Blackwood; Dry Creek; Ballarat; near Mansfield (P. 1870). Axedale; Campaspe River; Dry Diggings; Colac; Steiglitz; Yackandandah; Myrtleford Creek (P. 1871). Snowy Creek, in iron sand (P. 1874). Walhalla, in creeks (P. 1876). Possum Hill, Orville; near Pakenham (P. 1877-8). Fryerstown; Stockyard Creek (P. 1878). North of Lake Learmonth, in its basalt matrix (T.M.). Castlemaine district (B.S. 1861). Bass River and Western Port, in sand; Bullarook, in iron sand (P. 1883). Moondara (P. 1887). Glenlyon (P. 1889). Mount Bulla; head of western branch of Yarra River (M.S. 1884). Haskett (M.S. 1886). Eaglehawk (M.S. 1887). Tallarook; Gembrook (M.R. 1889). Toongabbie; Benalla; Werribee Gorge, near Ballan; Mornington (T.M.). Kiewa River (P.R. Vol. 6). Berwick; Bunyip River; Buninyong; Chiltern; Clunes; Cudgewa Creek; Euroa, Dandenong Ranges; Franklin River; Latrobe River; Loddon River; Upper Murray River; Rosedale; Bendigo; Sassafras Creek; Linton's; Woori Yaloak River (P.R. Vol. 3). See also *hyacinth*.